

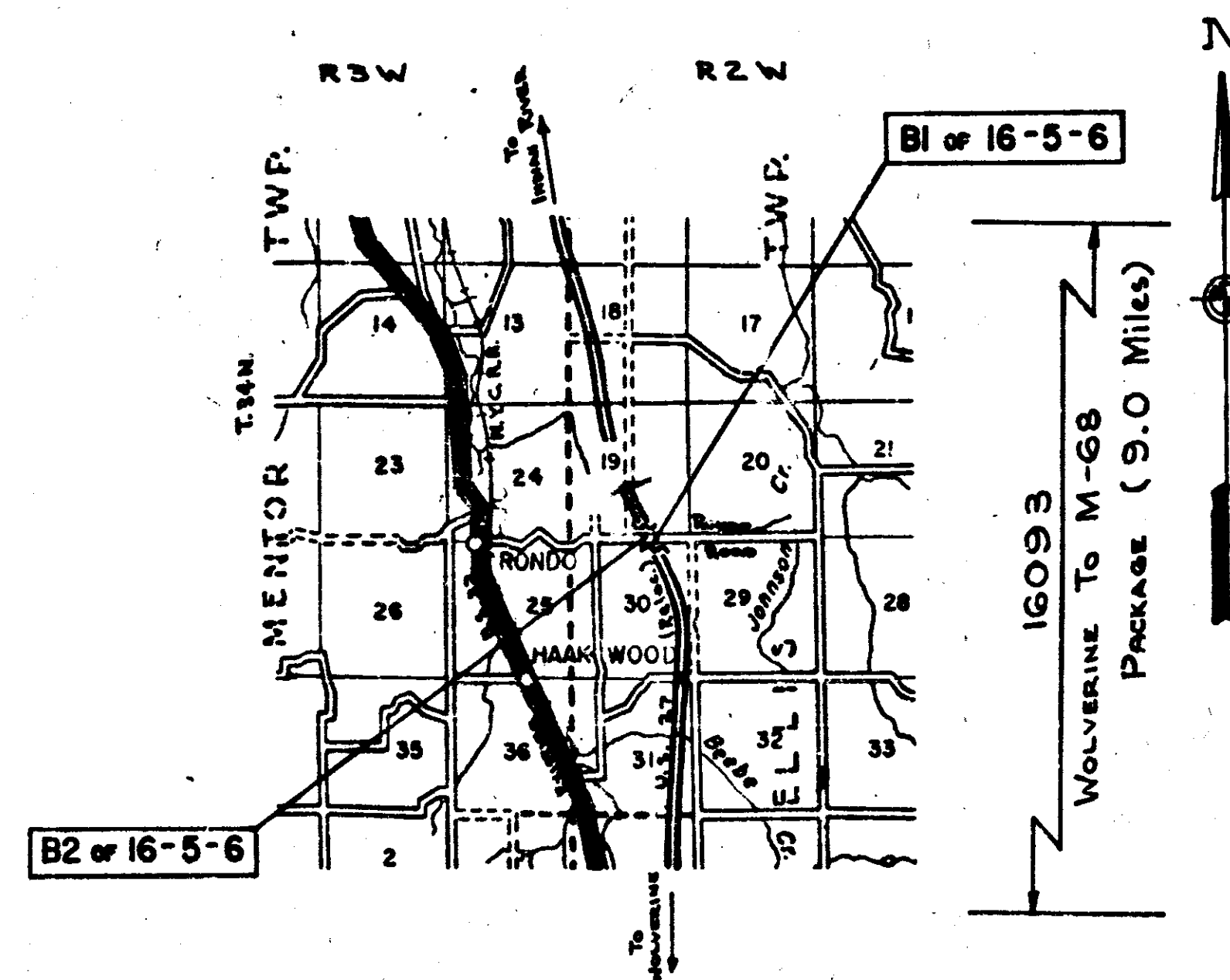
MICHIGAN STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE
STATE HIGHWAY COMMISSIONER

PLANS OF PROPOSED BRIDGES MICHIGAN PROJECT I-75-4 (20) 293 GRAYLING - INDIAN RIVER ROAD CHEBOYGAN COUNTY ELLIS TOWNSHIP

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL PLAN OF SITE
3	GENERAL PLAN OF STRUCTURE
4	BILL OF MATERIAL
5	ABUTMENT DETAILS
6	PIER DETAILS
7	SUPERSTRUCTURE DETAILS
8	SUPERSTRUCTURE DETAILS
9	SUPERSTRUCTURE DETAILS
10	SUPERSTRUCTURE DETAILS
11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS

2	GENERAL PLAN OF SITE
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10	SUPERSTRUCTURE DETAILS
11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS
RIOM	ALUMINUM RAILING, DRAIN CASTING, BAR CHAIR MOLDING AND BEVEL DETAILS



NOTE:
Where the following items are called for on the Plans,
they are to be constructed according to the Standard
Plan given below opposite each item, unless otherwise
indicated.

STANDARD PLANS TO BE PRINTED

SHEET NO.	TITLE
SP2D	STANDARD SLOPE PAVING DETAILS

STANDARD PLANS NOT TO BE PRINTED

SHEET NO.	TITLE

GENERAL NOTES

Except where otherwise indicated on these Plans or in the Proposal and Supplemental Specifications contained therein, all materials and workmanship shall be in accordance with the Michigan State Highway Department's Standard Specifications for Road and Bridge Construction, 1960 Edition.

The design of this structure is based on the Michigan State Highway Department's Specifications for the design of Highway Bridges, 1958 Edition, HS-44 Loading. Live load plus impact deflection = 1/800 of span length.

The character of all materials and the extent thereof as shown by borings has been obtained by methods and from sources believed to be reliable. The exactness of this information is, however, in no case guaranteed. Boring samples are on file in the Design Office of Lansing and are available for inspection.

All exposed concrete corners shown square on the Plans shall be beveled with 1/2" triangular moldings except as otherwise noted.

The stationing as shown on these plans for the intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) is believed to be correct. It shall, however, be checked at time of starting construction and if the stationing shown on the plans is incorrect it shall be reported to the Design Office of Lansing and the structure shall be staked out using the actual intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) as the control point.

CONTROL SECTION NO. 16093RN

CONTRACT FOR G & DS, Surf. & Strs.

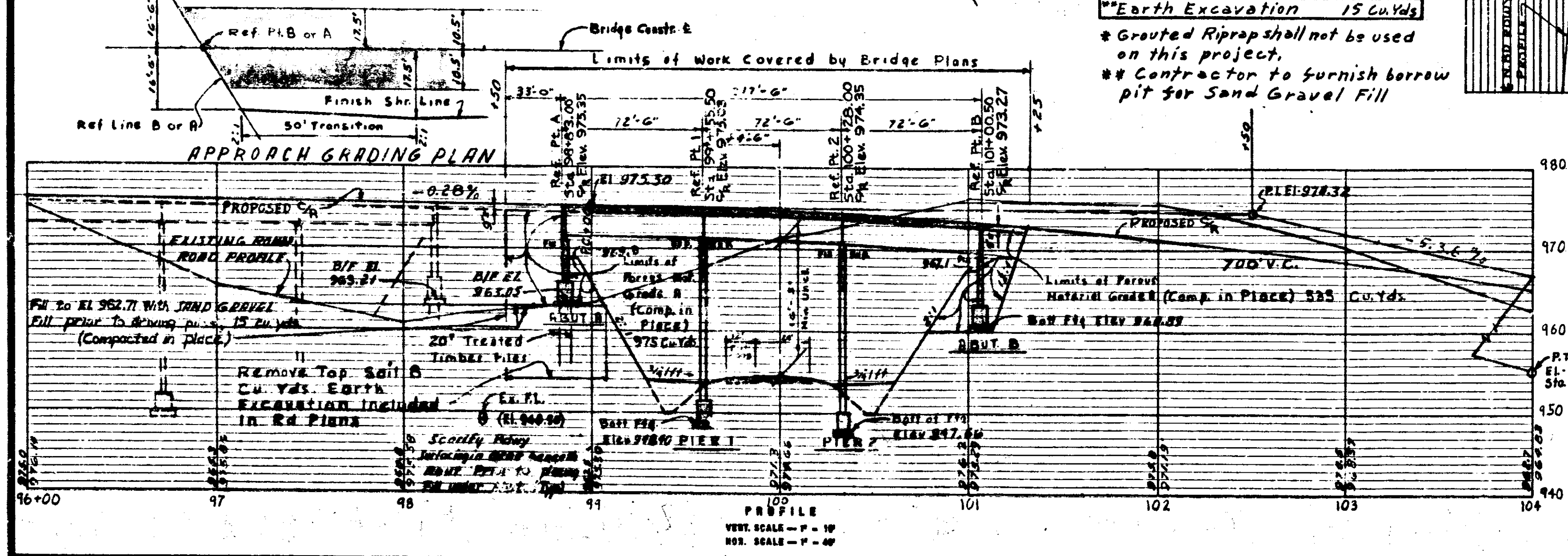
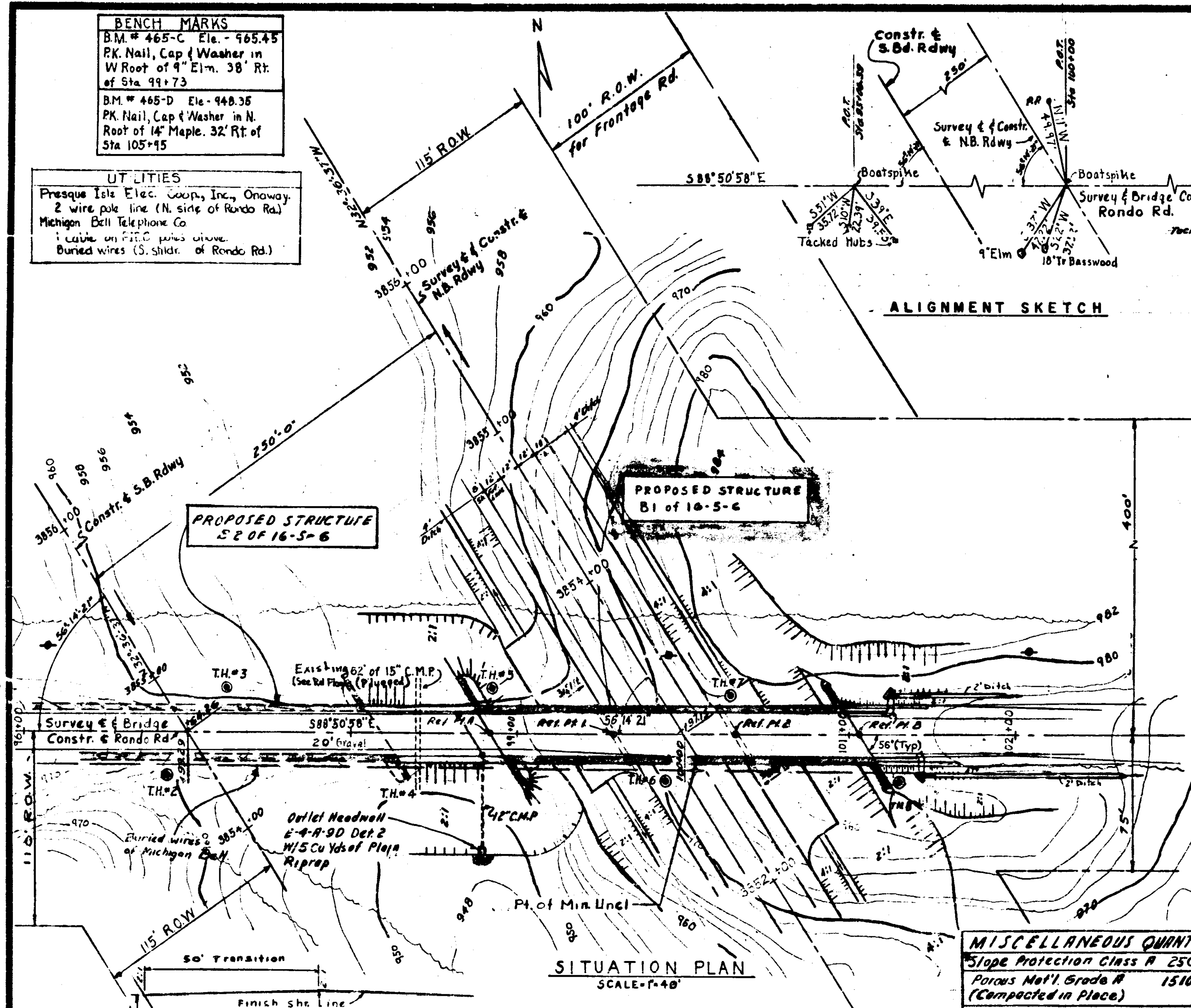
DIVISION APPROVAL	
CHECKED	DATE
RECOMMENDED FOR APPROVAL	DATE
RECOMMENDED FOR APPROVAL	DATE

OFFICES OF DESIGN AND CONSTRUCTION	
APPROVED	DATE
APPROVED	DATE

STATE HIGHWAY DEPARTMENT APPROVAL	
APPROVED	DATE
BY	DATE

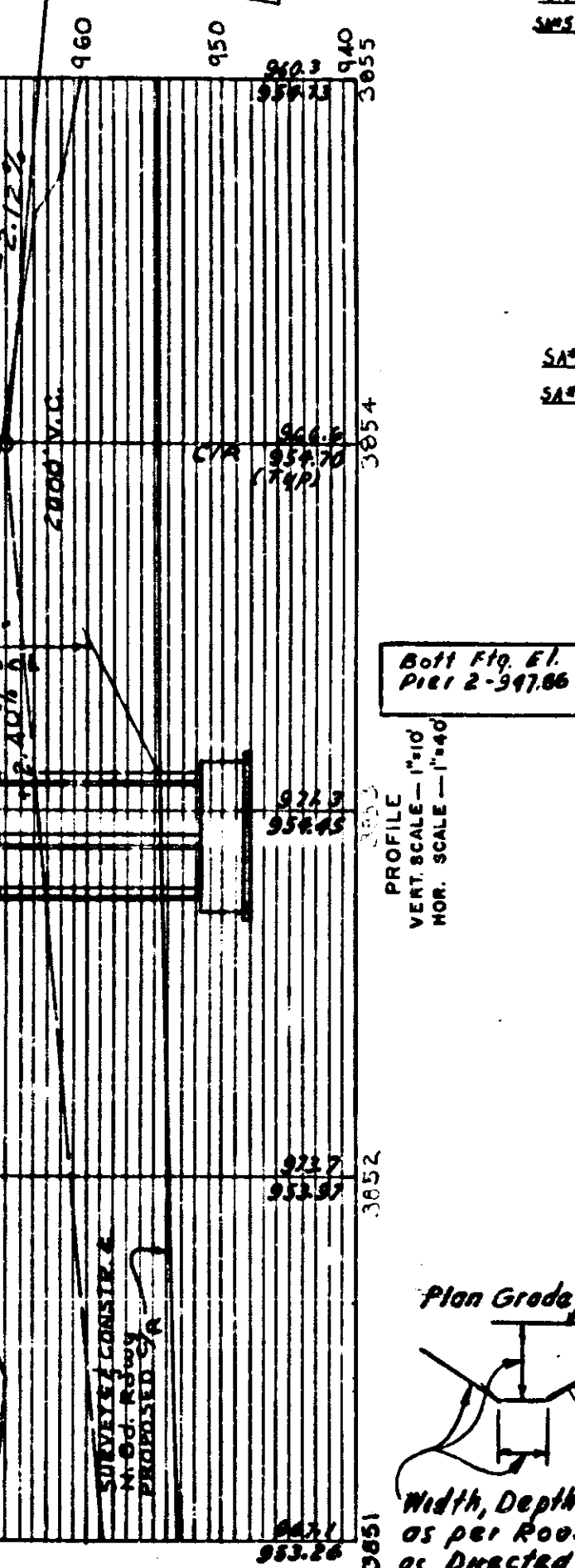
PLANS PREPARED BY	DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS
MICHIGAN STATE HIGHWAY DEPT.	APPROVED DATE

FILE NO. 16093 B1 & B2 of 16-5-G



MISCELLANEOUS QUANTITIES
Slope Protection Class A 250 Sq.Yds
Porous Mat'l. Grade A 1510 Cu.Yds
(Compacted in Place)
Earth Excavation 15 Cu.Yds
Grouted Riprap shall not be used on this project.
Contractor to furnish borrow pit for Sand Gravel Fill

LOG OF BORINGS T.H.#6
T.H.#5
Note: Consistency determined by inspection of samples and substantiated by Soils Resistance to Casing and Jet Rod. (All Test Holes).
Penetration Samples were taken with 0.2" Sampler Driven with 140" Hammer Telling 30" (Number of blows to drive 12" shown circled).
P.T. Sta. 386+00
Elev. 944.80



LOG OF BORINGS T.H.#6

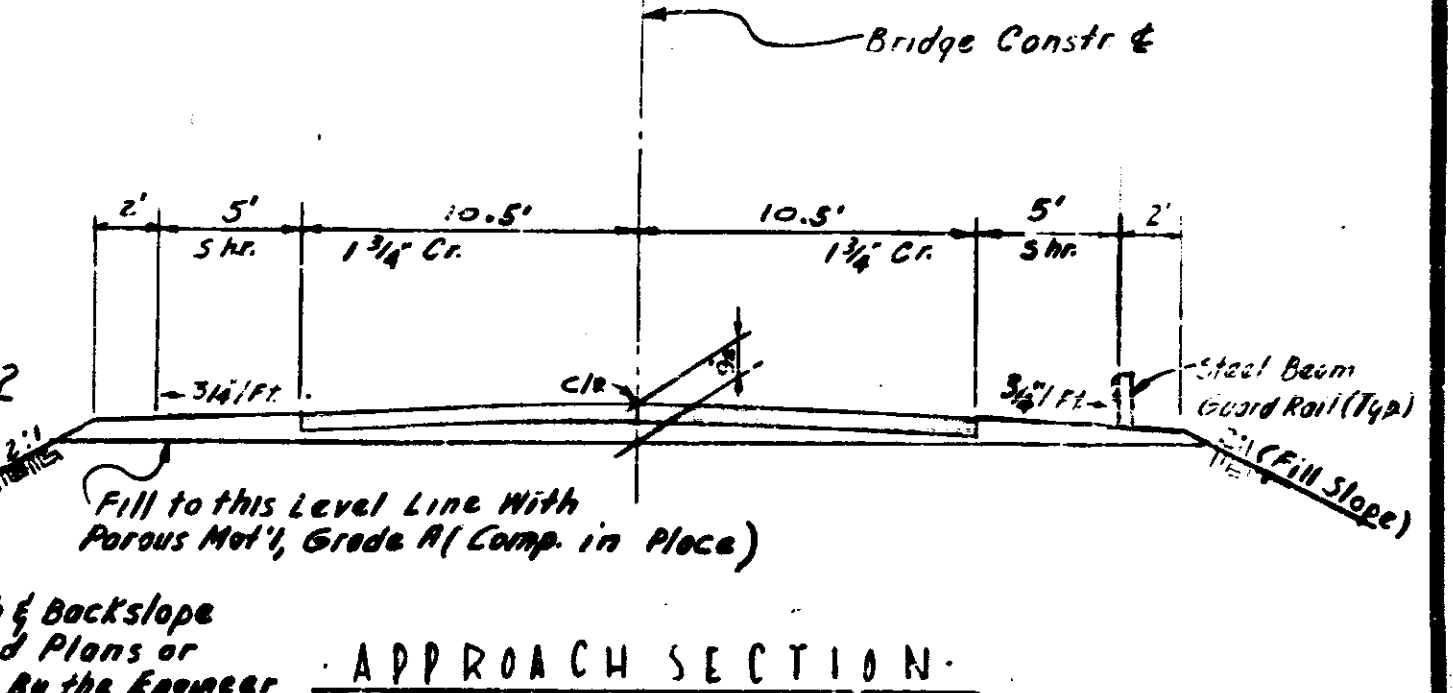
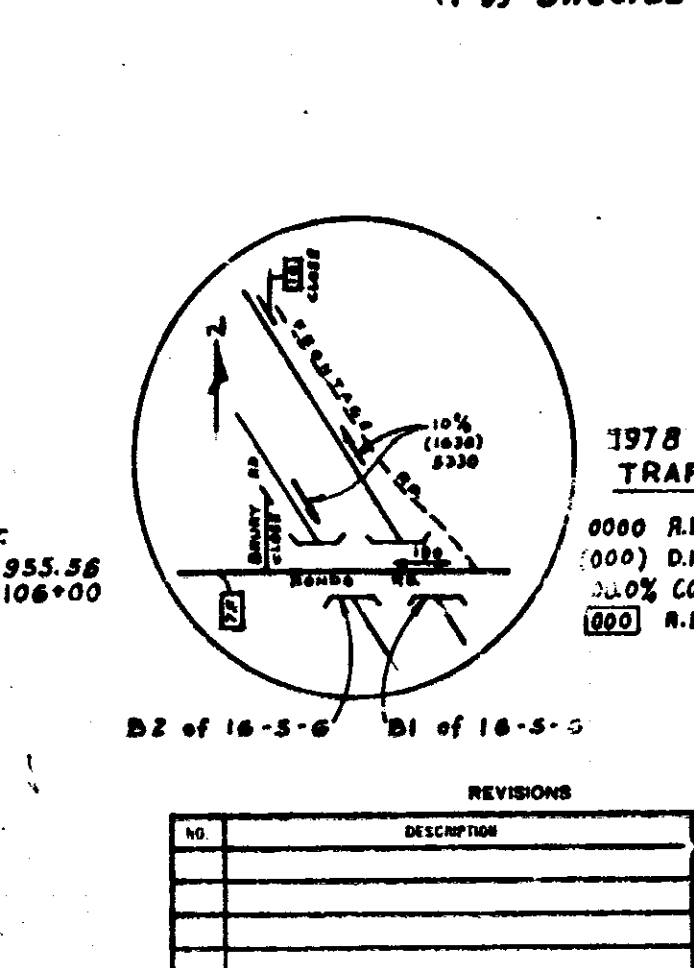
Station	Depth (ft)	Soil Description
386+00	0.0	Loose Med. Brown Sand Some Gravel
386+00	1.0	Compact Med. Brown Sand, Some Coarse Sand & Gravel
386+00	2.0	Very Compact Med. Brown Sand Some Gravel and Limestone Fragments
386+00	3.0	Compact Med. Brown Sand Some Limestone Fragments
386+00	4.0	Very Compact Med. Brown Sand, Gravel & Limestone Fragments
386+00	5.0	Loose Med. Brown Sand, Little Loom & Gravel
386+00	6.0	Loose Med. Brown Sand, Little Clay & Gravel
386+00	7.0	Firm Med. Brown Sand
386+00	8.0	Compact Medium Brown Sand
386+00	9.0	Very Compact Med. Brown Sand, Trace of Gravel

LOG OF BORINGS T.H.#7

Station	Depth (ft)	Soil Description
386+00	0.0	Loose Med. Brown Sand, Some Gravel
386+00	1.0	Firm Med. Brown Sand (Gravel)
386+00	2.0	Comp. Med. Brown Sand Some Gravel
386+00	3.0	Comp. Med. Brown Sand
386+00	4.0	Very Comp. Fine to Med. Brown Sand, Little Gravel
386+00	5.0	Very Comp. Clayey Cemented Fine to Med. Brown Sand, Little Gravel
386+00	6.0	Very Comp. Fine to Med. Brown Sand, Little Gravel

LOG OF BORINGS T.H.#8

Station	Depth (ft)	Soil Description
386+00	0.0	Loose Med. Brown Sand, Some Gravel
386+00	1.0	Very Comp. Med. Brown Sand, Some Gravel & Limestone Fragments
386+00	2.0	Very Comp. Fine to Med. Brown Sand
386+00	3.0	Very Comp. Coarse Brown Sand & Gravel
386+00	4.0	Very Comp. Clayey Fine Brown Sand
386+00	5.0	Very Comp. Clayey Med. Brown Sand Some Limestone Fragments



APPROACH SECTION
Note: Clearing, U.S. 27 rdwy. excav. & drainage ditches in the vicinity of the structure are included with road plans. These items of work shall be done prior to starting work on the bridge.
The work covered by these plans includes construction of the proposed bridge, placing porous material grade behind & in front of the abutments, and placing slope protection Class A to the limits shown.
The contractor shall locate underground utilities prior to starting work & shall conduct his operations in such a manner as to insure that they will not be disturbed.
CONTROL SECTION No. 16093RN

MICHIGAN STATE HIGHWAY DEPARTMENT
1-75 U.S. 27 (Rdwy.) N.B. KING RONDO ROAD 3.6 MILES N.E. of WOLVERINE

GENERAL PLAN OF SITE

WJK 12/5/60

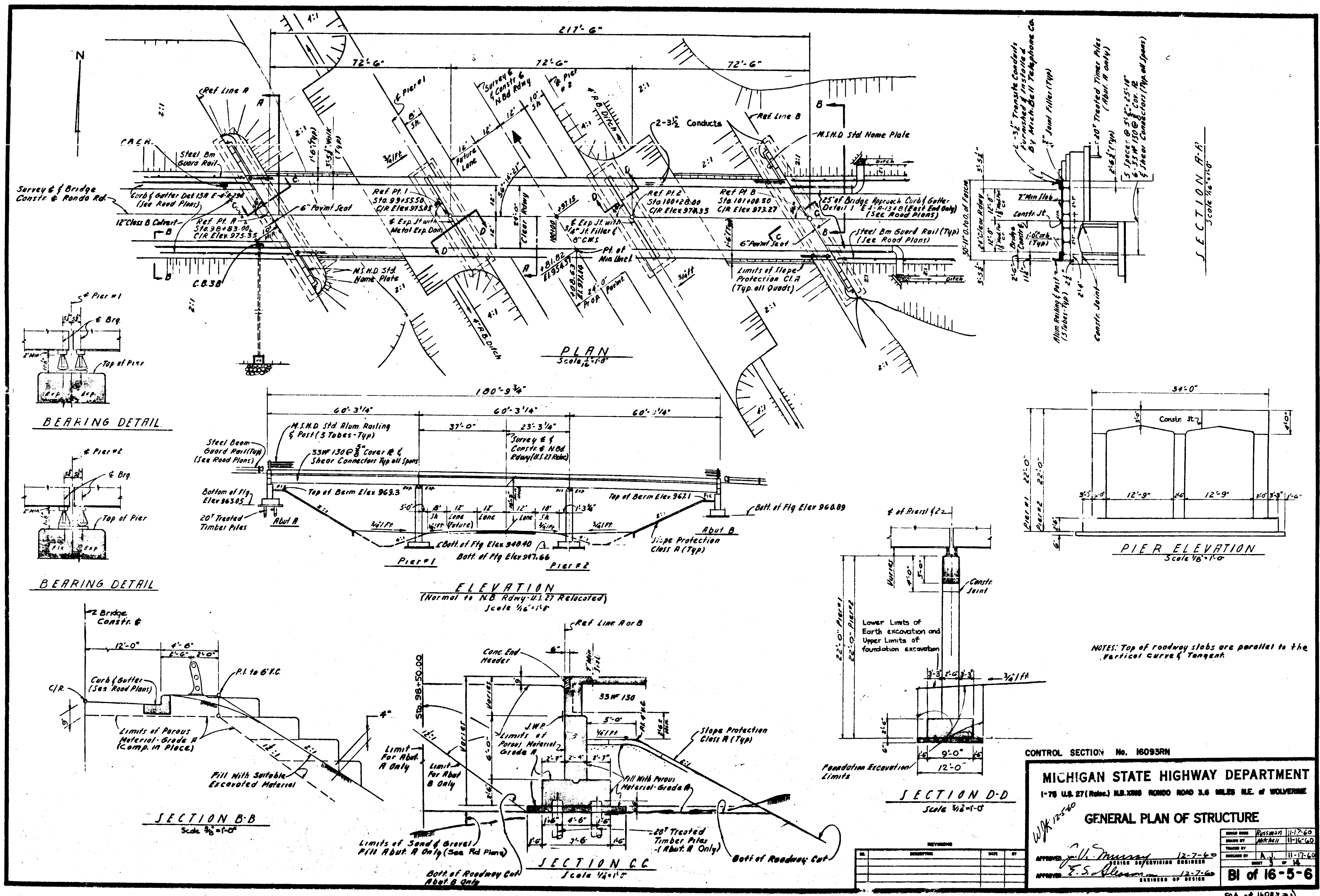
APPROVED: J.V. Murray 12-7-60
DESIGN SUPERVISING ENGINEER

APPROVED: Z.S. Alcorn 12-7-60
ENGINEER OF DESIGN

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

BI of 16-5-6



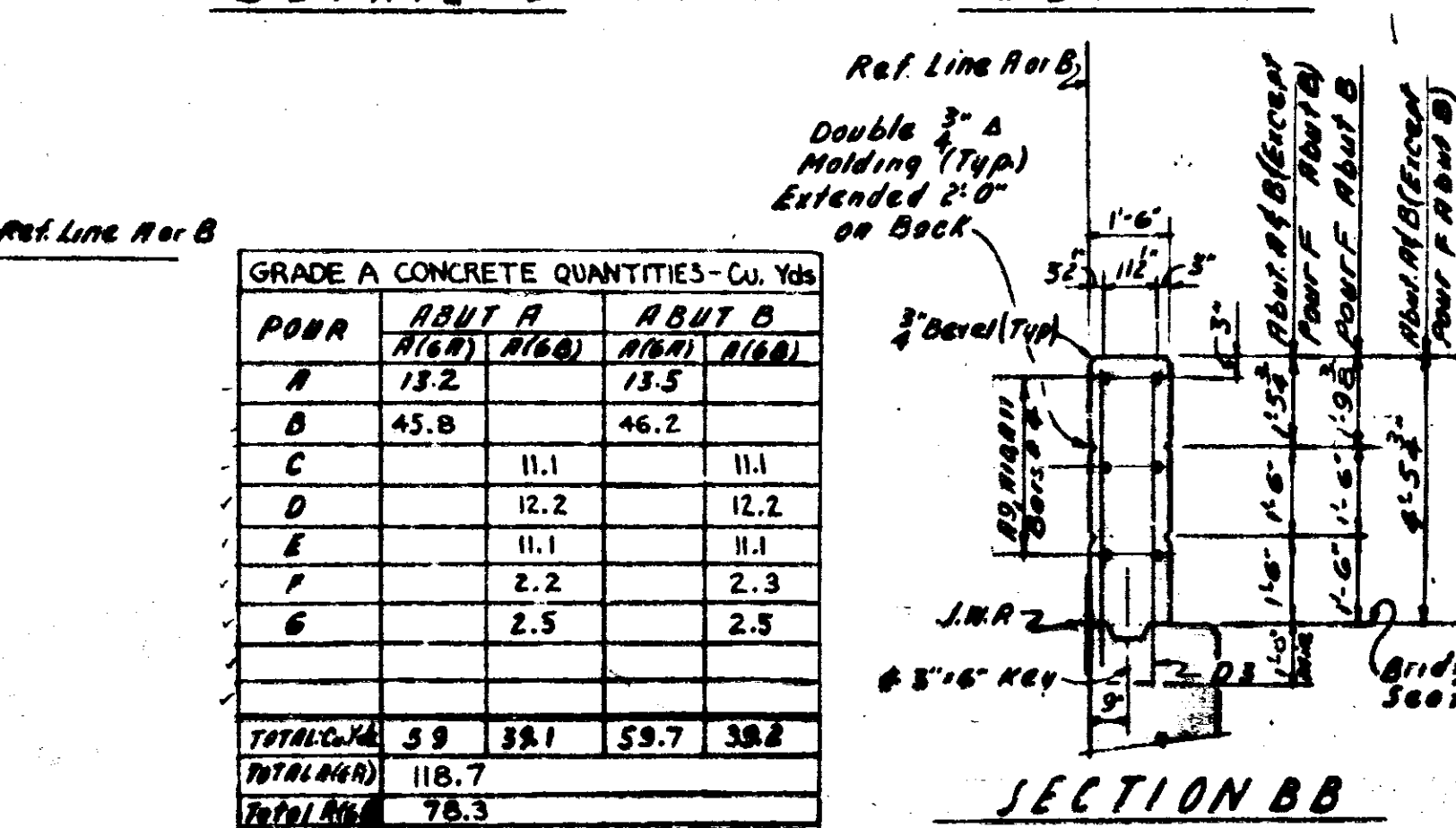
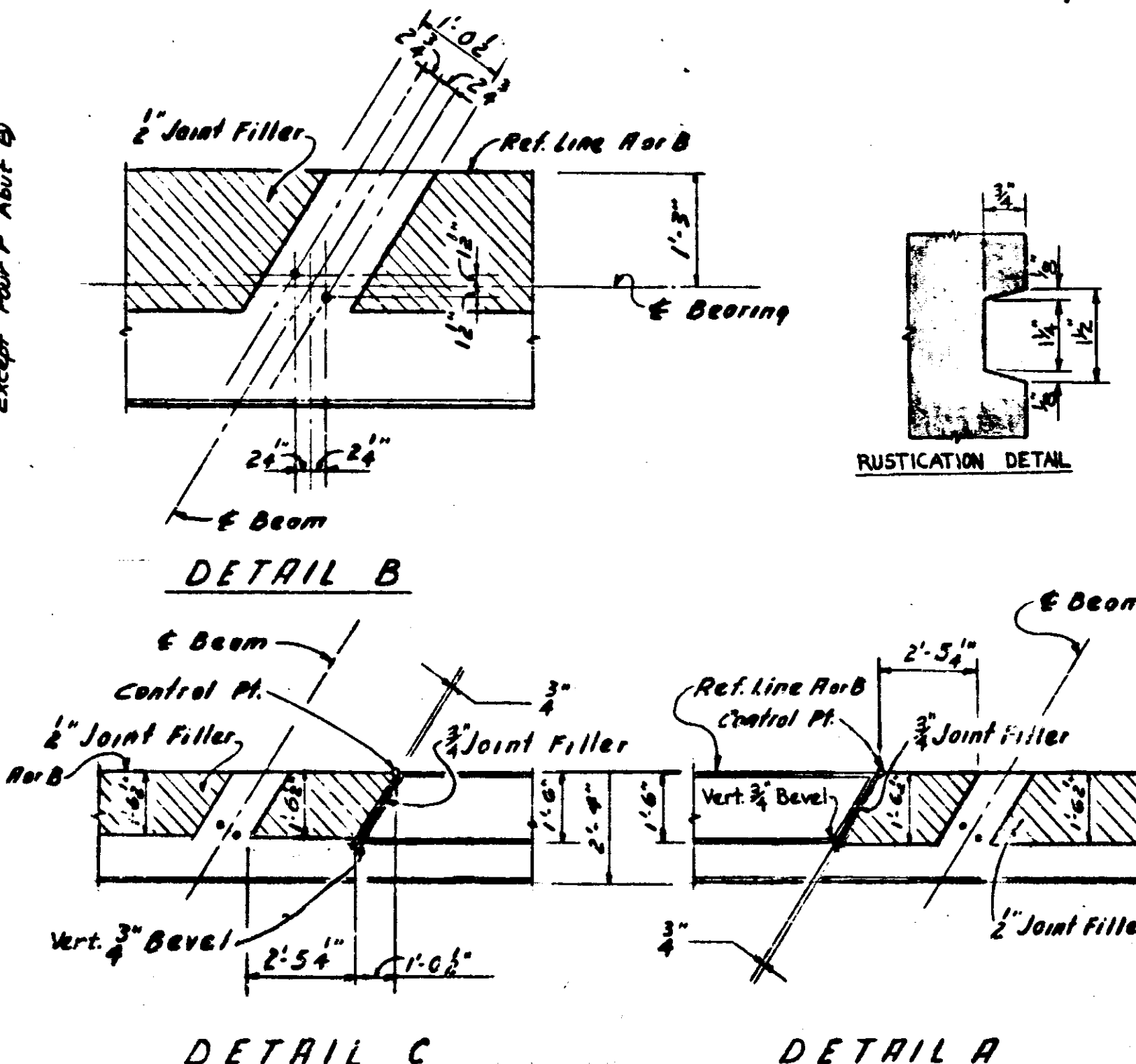
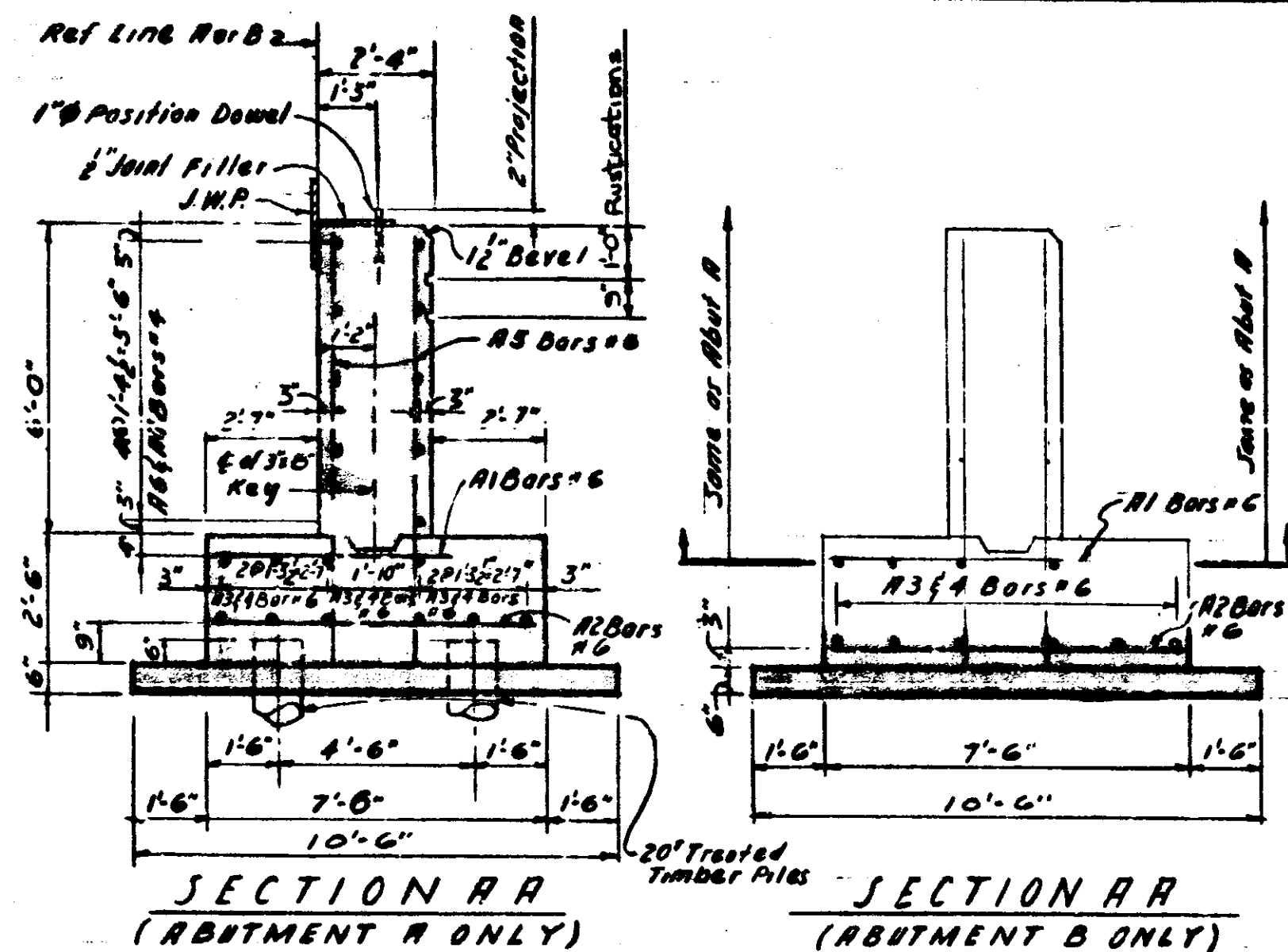
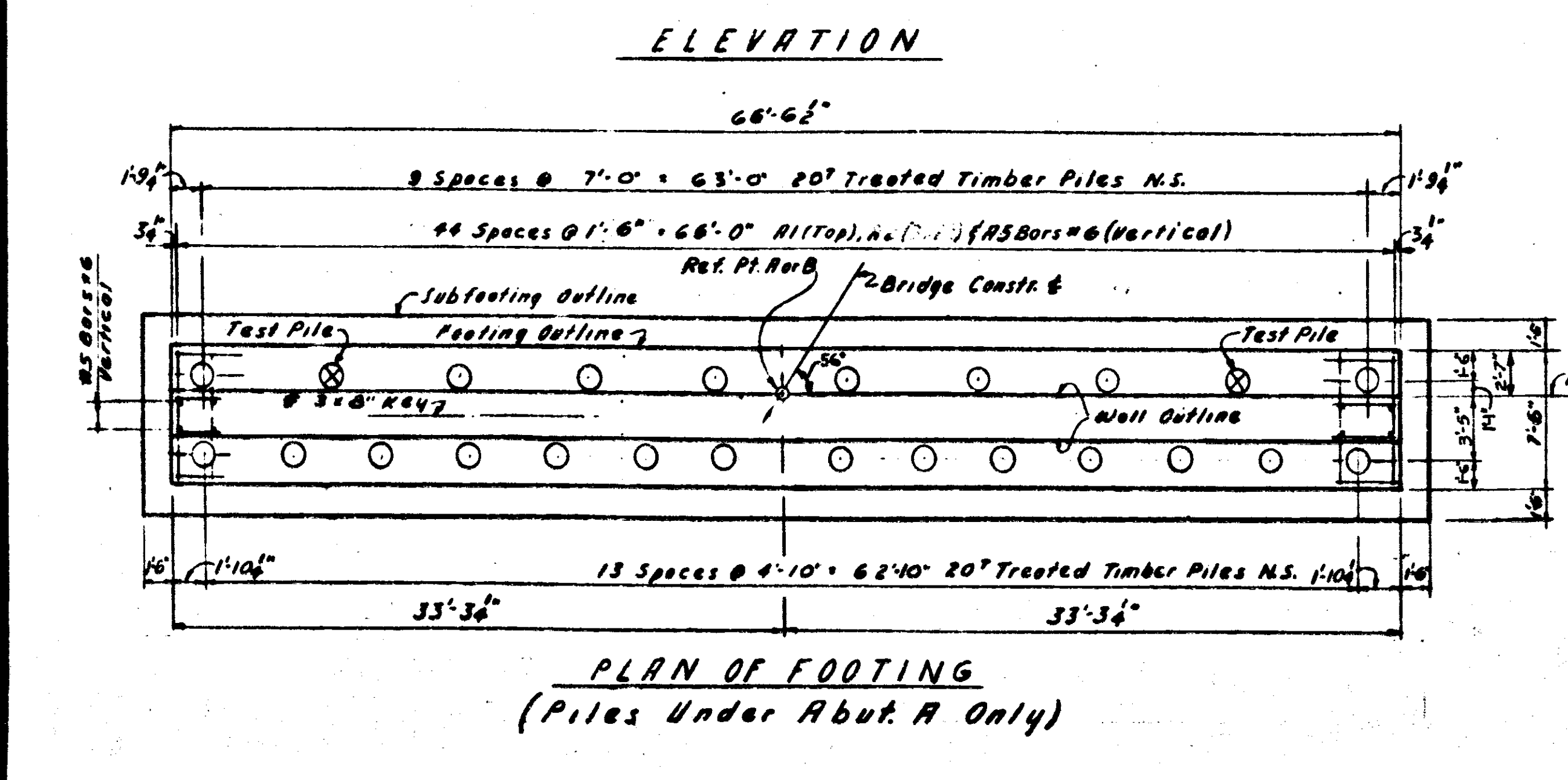
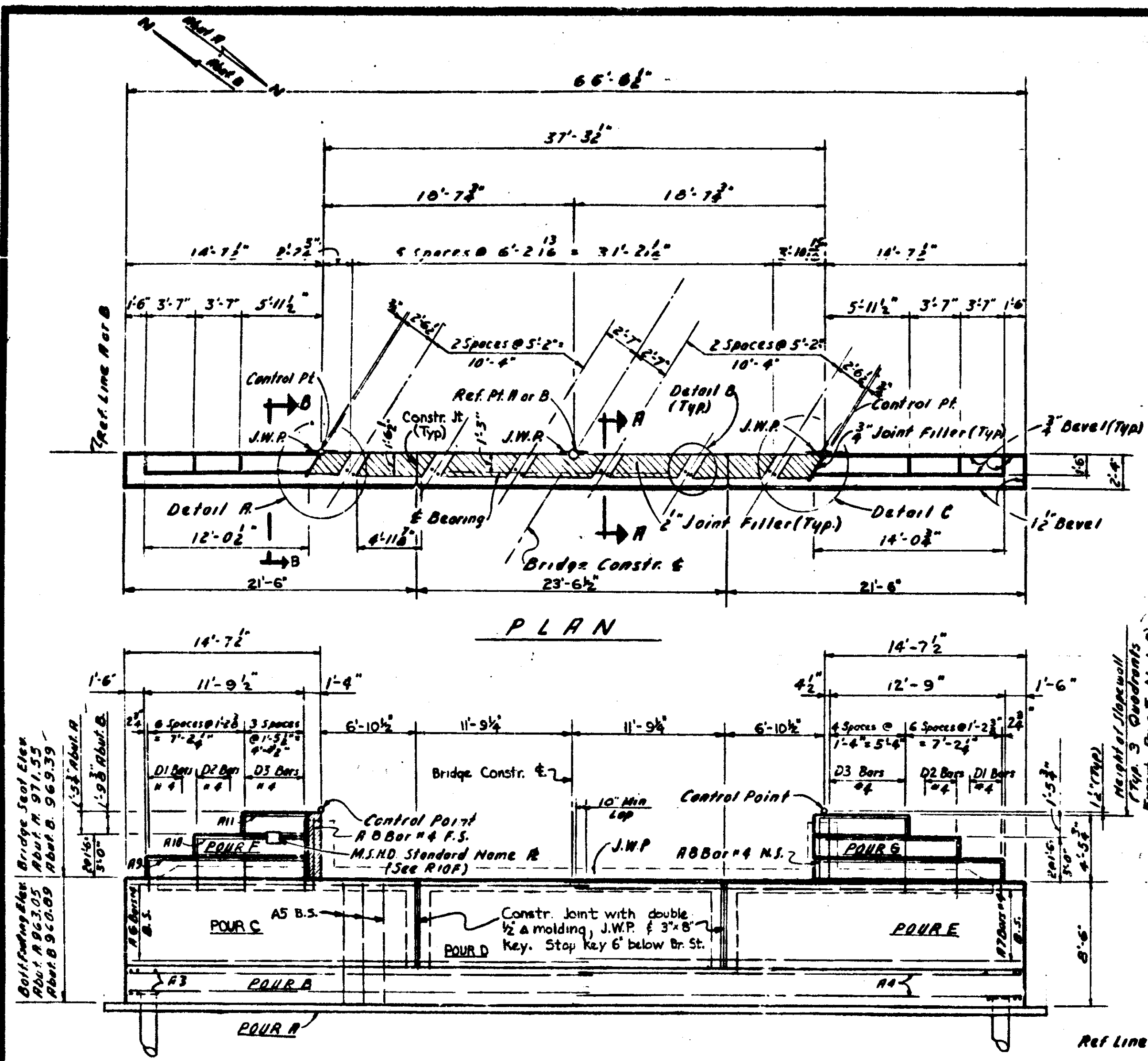
ITEM	UNIT	QUANTITY	DATE					Totals	PLAN EXTRAS			
			A	B	C	D	E		DATE	DESCRIPTION	UNIT	QUANTITY
			8/7/61	8/7/61	10/31/61	2/4/63	2/4/63		2/4/63	02001, AUTH. F. EARTH EXCAVATION	Cu Yds	558
BRIDGE												
Earth Excavation	Cu. Yds.	18					-15					0
Unclassified Excavation	Cu. Yds.	220		+18								238
Treated Timber Pile-Furnished	Ln. Ft.	784	-154									630
Treated Timber Pile-Driven	Ln. Ft.	720	-178.8									541.2
Cutoff-Treated Timber Pile	Each	24										24
Treated Timber Test Pile	Each	2										2
Grade A (GA) Concrete-Substructure	Cu. Yds.	205.7										205.7
Grade A (GB) Concrete-Substructure	Cu. Yds.	125.8										125.8
Grade A (GB) Concrete-Superstructure	Cu. Yds.	228.1			+9.2							237.3
Cement	Bbls.	800				+24						824
Steel Reinforcement	Lbs.	63,644										63,644
Structural Steel Fabrication & Erection	Lbs.	207,700		+551								208,251
Shear Connectors	Lump Sum	L.S.										L.S.
1/2" Joint Filler	Sq. Ft.	92										92
3/4" Joint Filler	Sq. Ft.	61										61
Hot-Poured Rubber-Asphalt Type Filler	Ln. Ft.	74										74
Joint Waterproofing	Sq. Ft.	280										280
Copper	Lbs.	180										180
Aluminum Bridge Rating-Fabrication & Erection (31lbs)	Ln. Ft.	435										435
Field Painting	Lump Sum	L.S.										L.S.
Slope Protection Class A	Sq. Yds.	250				+46						296
Porous Material Grade A (Comp. in Place)	Cu. Yds.	1510					-553					957

Balanced by A.J. 5/29/63
 CKD - F.O.C. - 5/29/63

MICHIGAN STATE HIGHWAY DEPARTMENT
 BILL OF MATERIAL

ISSUED BY	Russman 11/19/60
DESIGNED BY	E.D.C. 11-15-60
CHECKED BY	A.J. 12-2-60
DATE	4-14

B1 of 16-5-6



QUANTITY TREATED TIMBER PILES									
SECTION	TYPE	NO	FEET	CU YD	NO	FEET	CU YD	CUT OFF	ELEVATION
ABUT A	Q Vail	22	32	30	1	704	660	22	963.53
	Q Test	2	40	30	1	80	60	2	963.53
	Total	24				784	720	24	

2 Treated Timber Test Piles

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	AMOUNT	ABUT A	ABUT B
Joint Waterproofing	Sq Ft	140	140	280
1/2" Joint Filler	Sq Ft	45.9	45.9	92
3/4" Joint Filler	Sq Ft	16.7	16.7	33

NOTES:

Abutments are similar except where noted

J.W.P. denotes joint waterproofing

N.S. denotes neerside

F.S. denotes forside

B.S. denotes bothsides

Slope walls are to be cast after superstructure is complete to top of sidewalk

Position dowels shall be set accurately to a template.

The bridge seal shall be finished to a true plane of the elevation shown and shall not vary more than 1/8" under a ten foot straight edge (not more than 1/16" under any bearing).

All piles shall be driven to a minimum bearing capacity of 20 tons

For bevel f'molding details, see sheet # R10

This design is based on a maximum foundation pressure of 2400 pounds per square foot and a maximum average foundation pressure of 1750 pounds per square foot for Abut. B only.

MICHIGAN STATE HIGHWAY DEPARTMENT

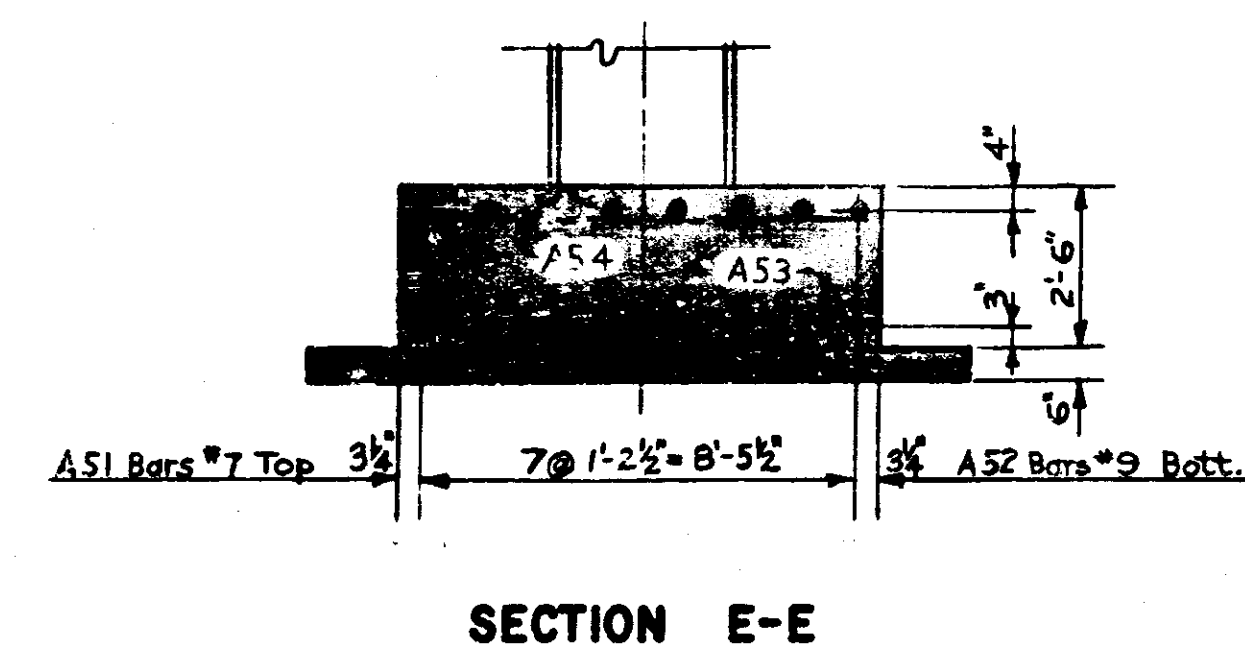
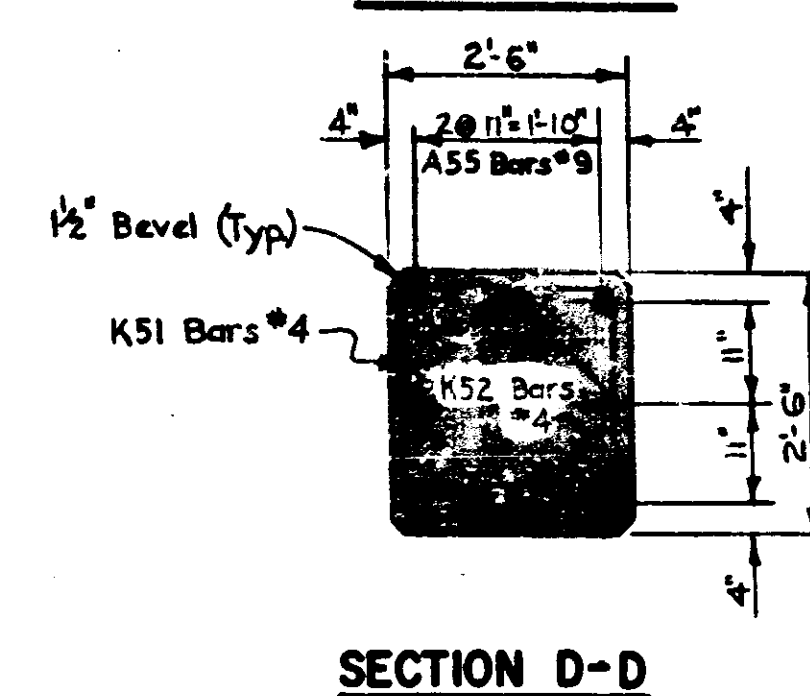
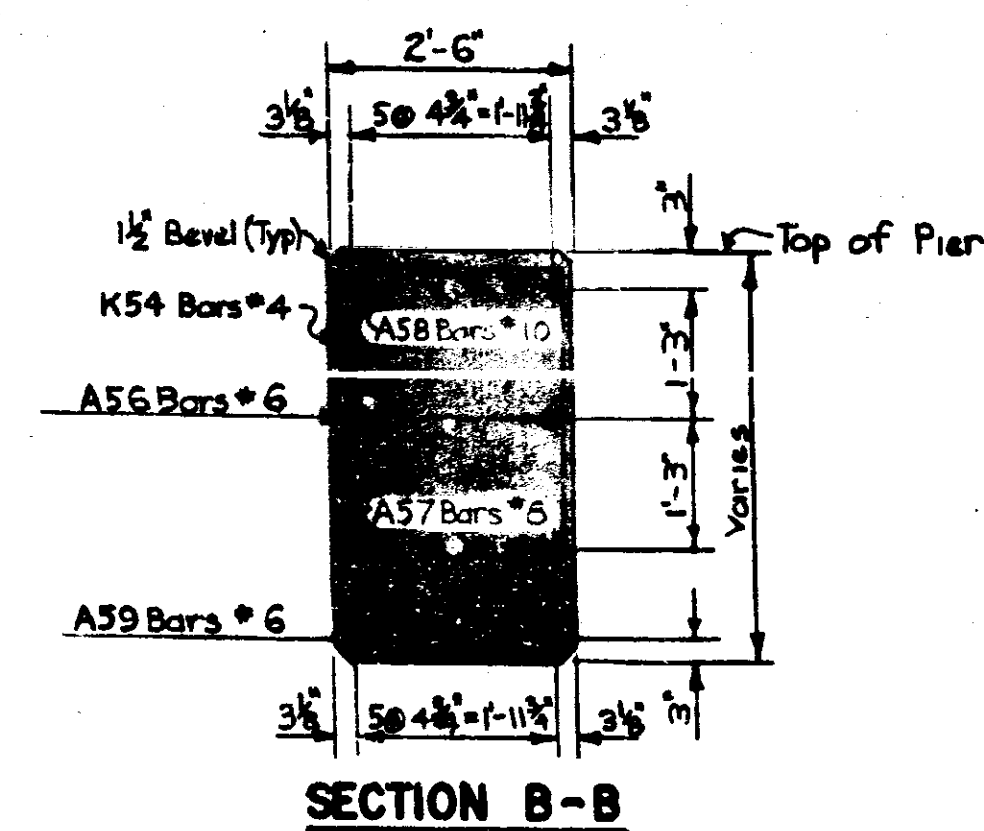
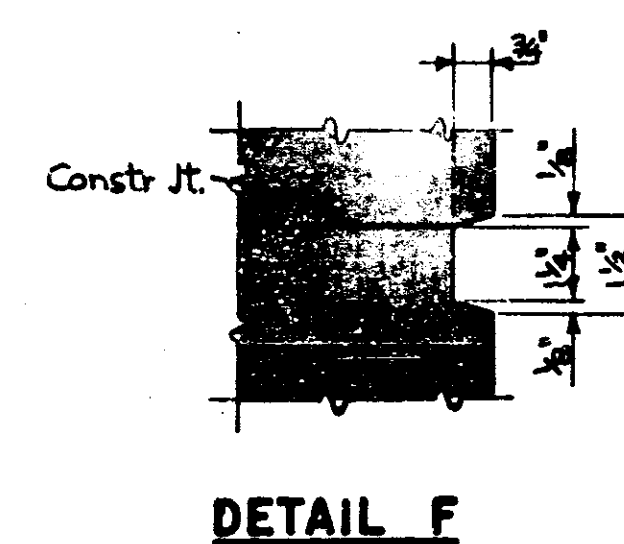
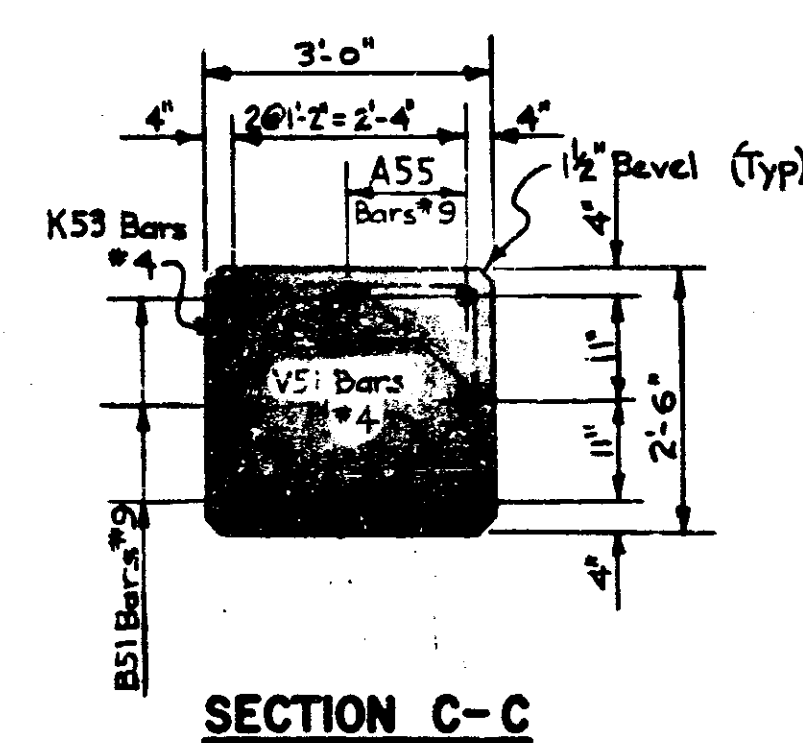
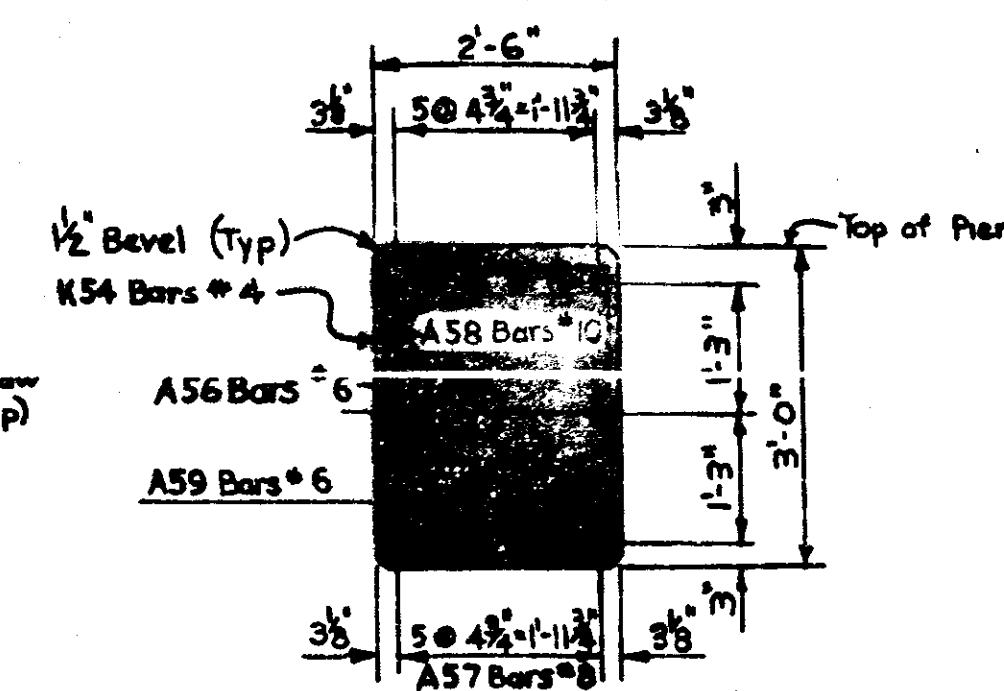
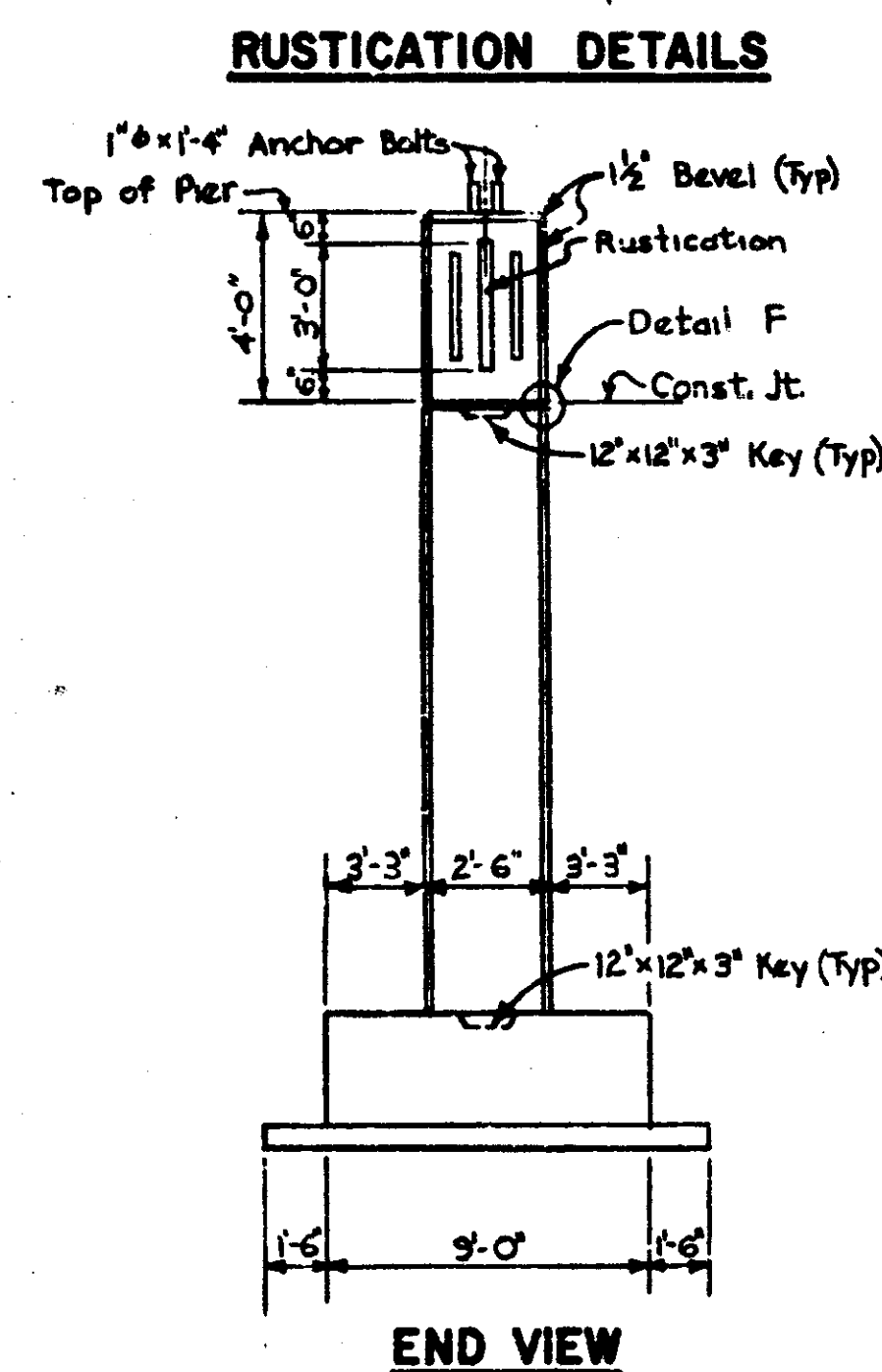
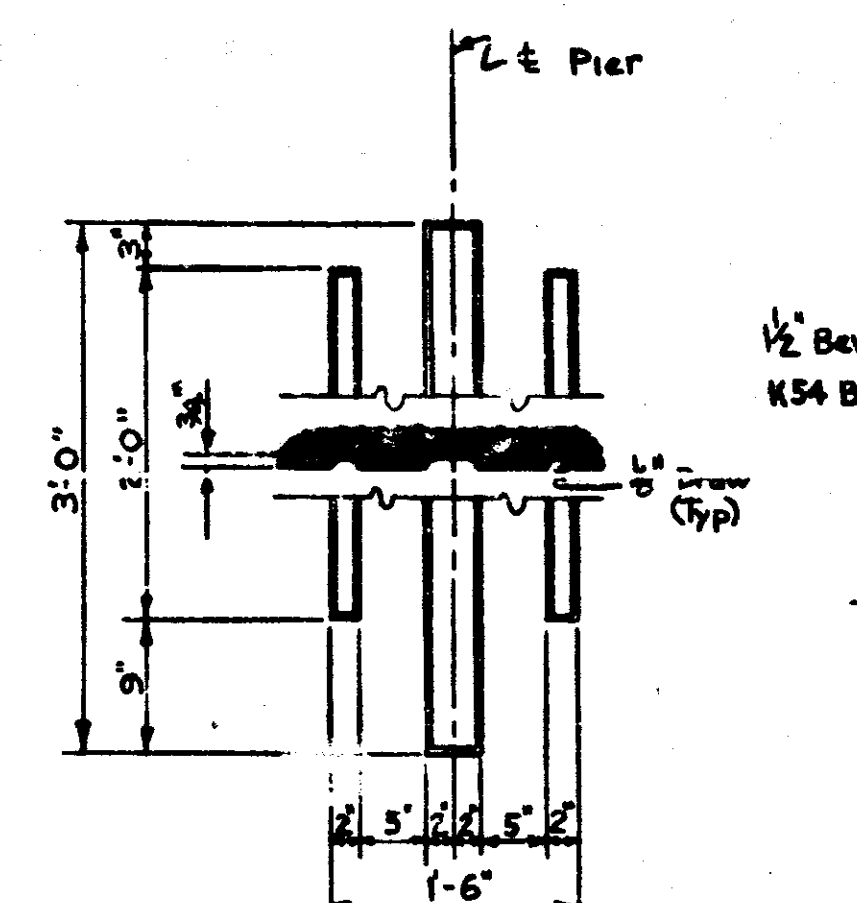
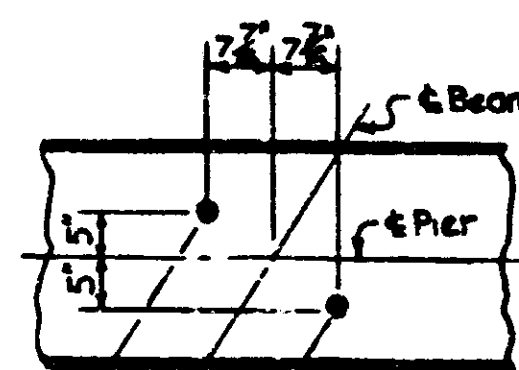
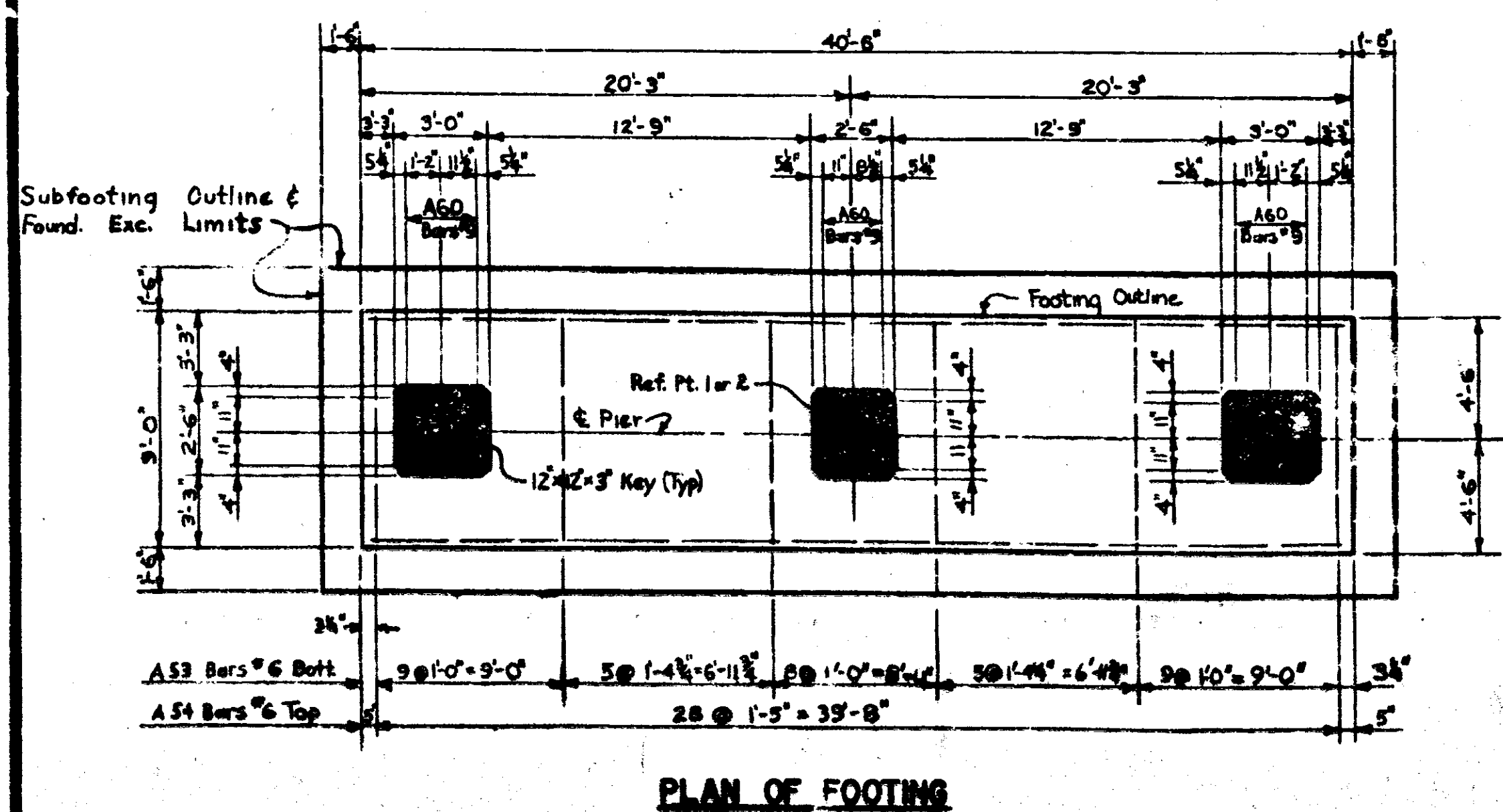
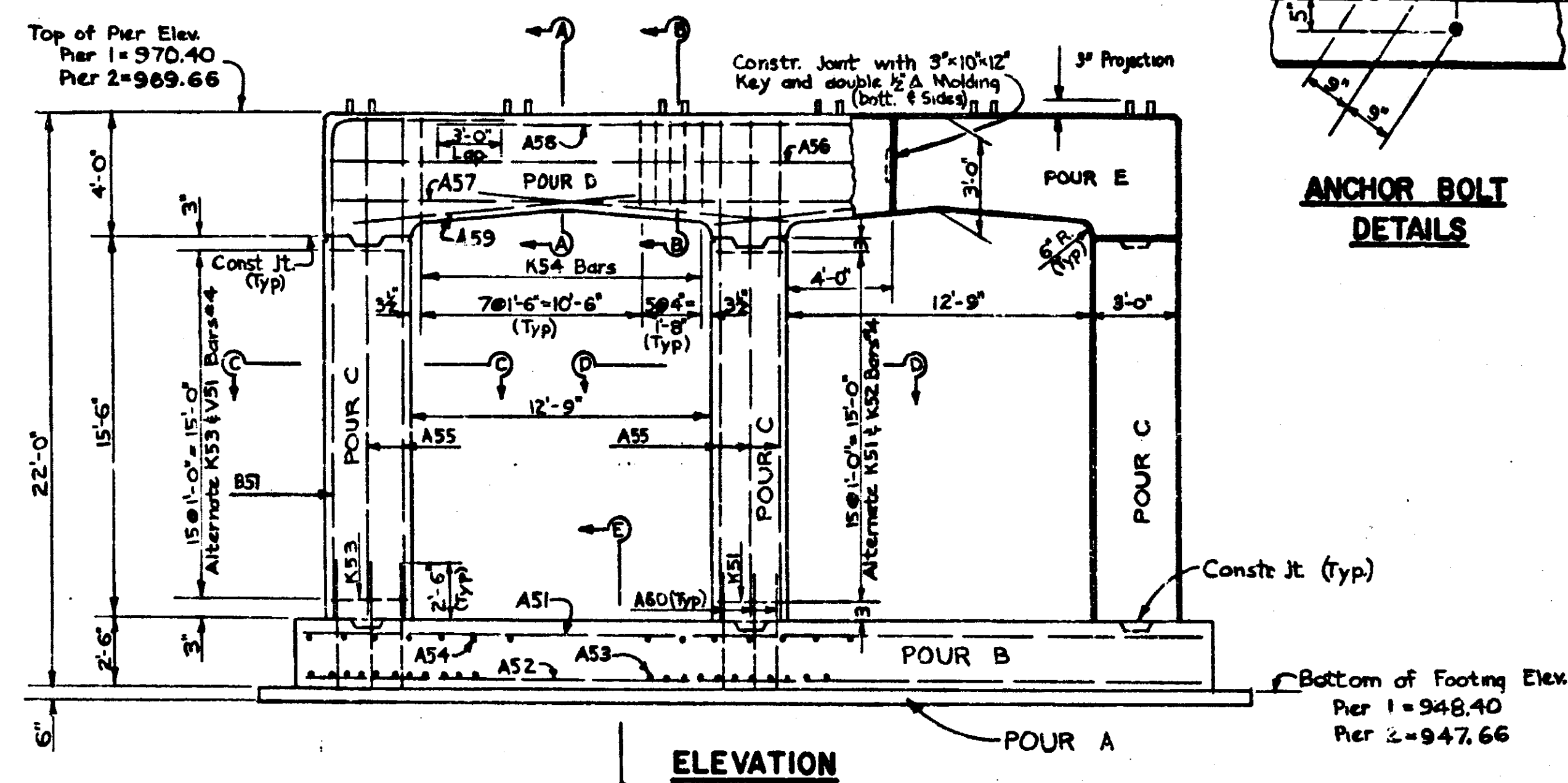
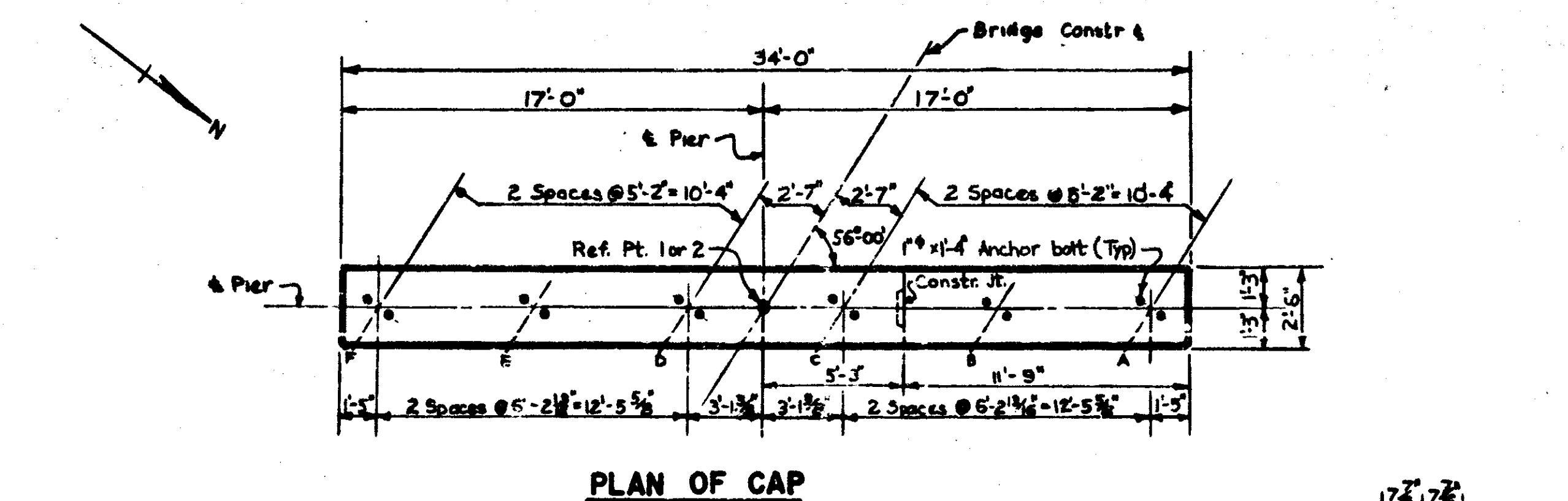
ABUTMENT DETAILS

REVISIONS

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			

DATE: 11-19-60
DRAWN BY: J.M. 11/19/60
CHECKED BY: F.O.C. 11-17-60
BY: 11-17-60

B1 of 16-5-6



Notes:

Anchor bolts shall be set accurately to a template.
Piers are similar except as noted.
For Bevel & Molding details, see Std. Sh R10.
Anchor bolts are to be set accurately to a template.

The tops of piers shall be finished to a true plane at the elevation shown and shall not vary more than $\frac{1}{8}$ " under a ten foot straight edge and not more than $\frac{1}{8}$ " under any bearing.

Reinforcing steel spacing in girders is to be adjusted as required to facilitate setting of anchor bolts.

This design is based on a maximum foundation pressure of 2400 pounds per square foot and a maximum average foundation Pressure of 1850 pounds per square foot.

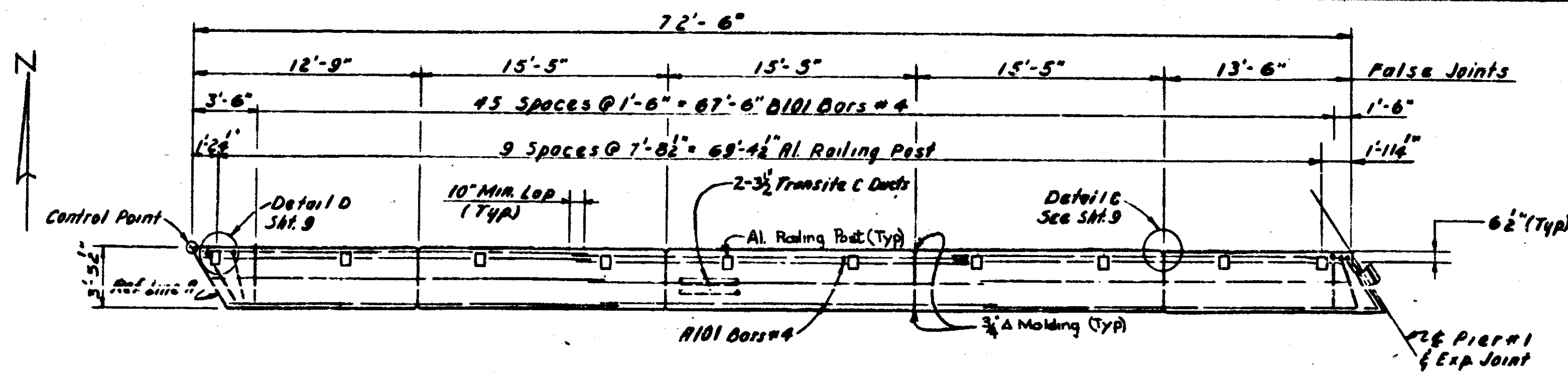
The Project Engineer shall adjust the spacing of the reinforcing steel as required to permit placing of anchor bolts.

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	PIER 1	PIER 2	TOTAL
Foundation Excavation	Cu. Yds.	110	110	220

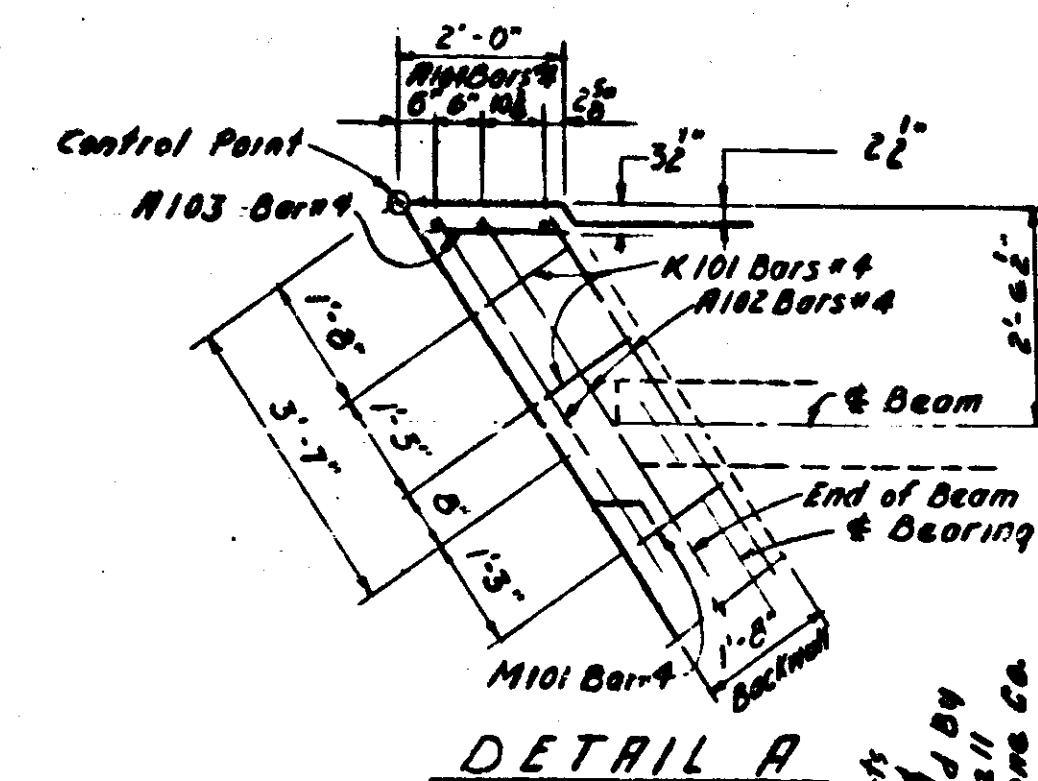
GRADE A CONCRETE QUANTITIES - CUBIC YARDS					
POUR	LOCATION	PIER #1		PIER #2	
		(6A)	(6B)	(6A)	(6B)
A	Subfooting	9.7		9.7	
B	Footing	33.8		33.8	
C	Columns		12.2		12.2
D	Girder		7.6		7.6
E	Order		3.9		3.9
Subtotal		43.5	23.7	43.5	23.7
Total - (6A)		87.0 cu yds			
Total - (6B)		47.4 cu yds			

MICHIGAN STATE HIGHWAY DEPARTMENT

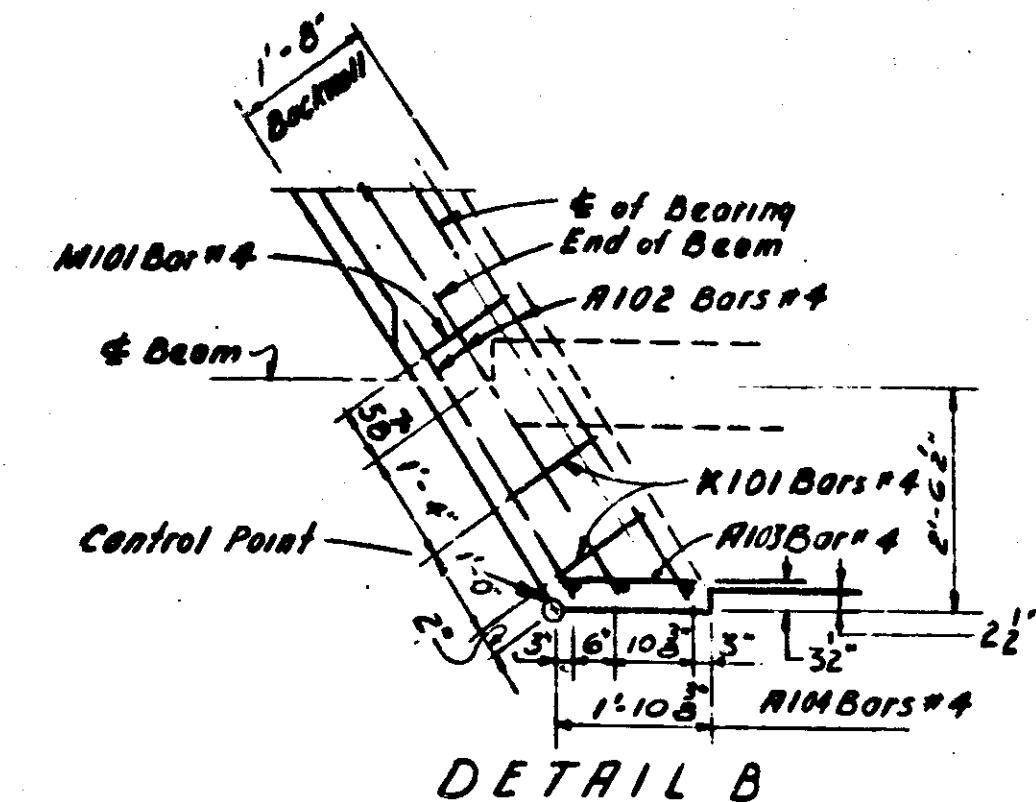
PIER DETAILS



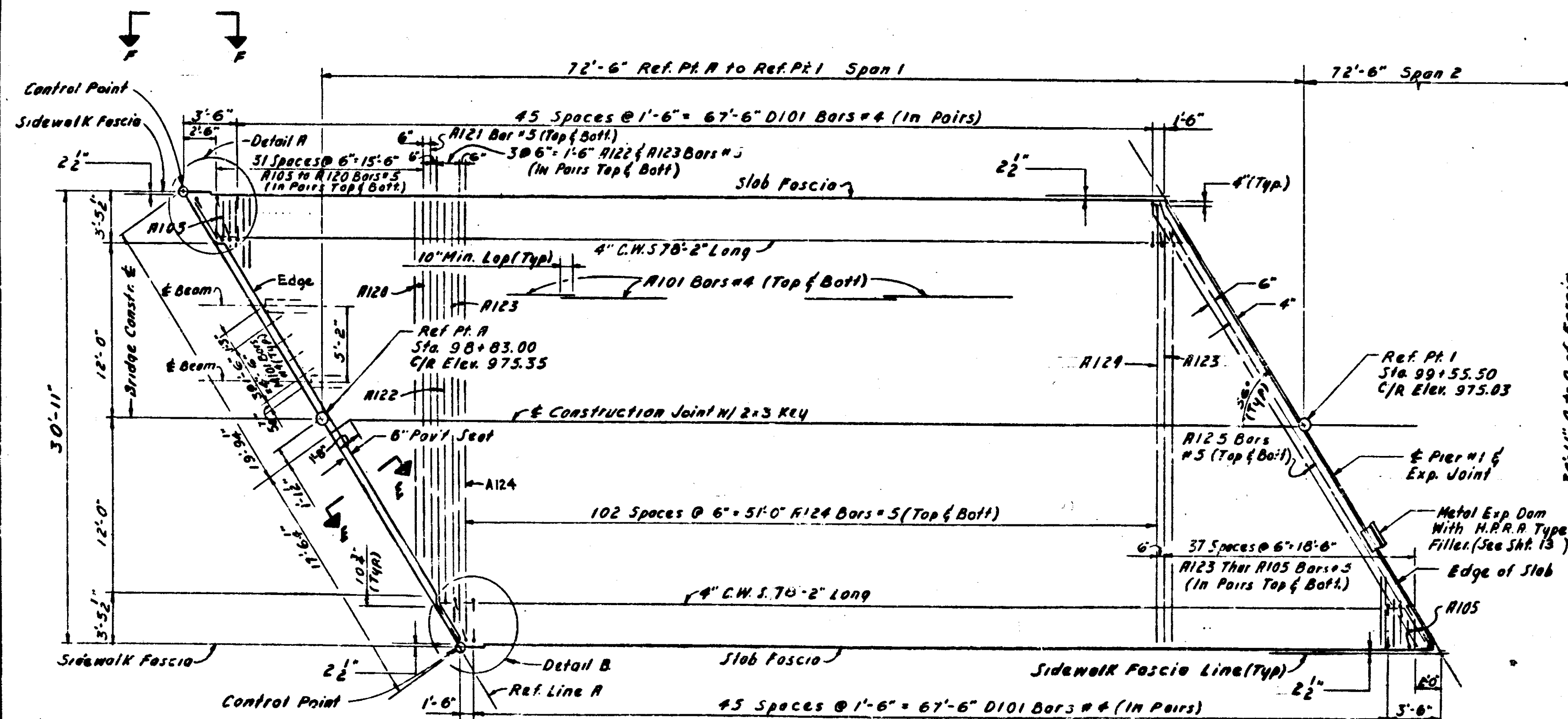
PLAN OF SIDEWALK



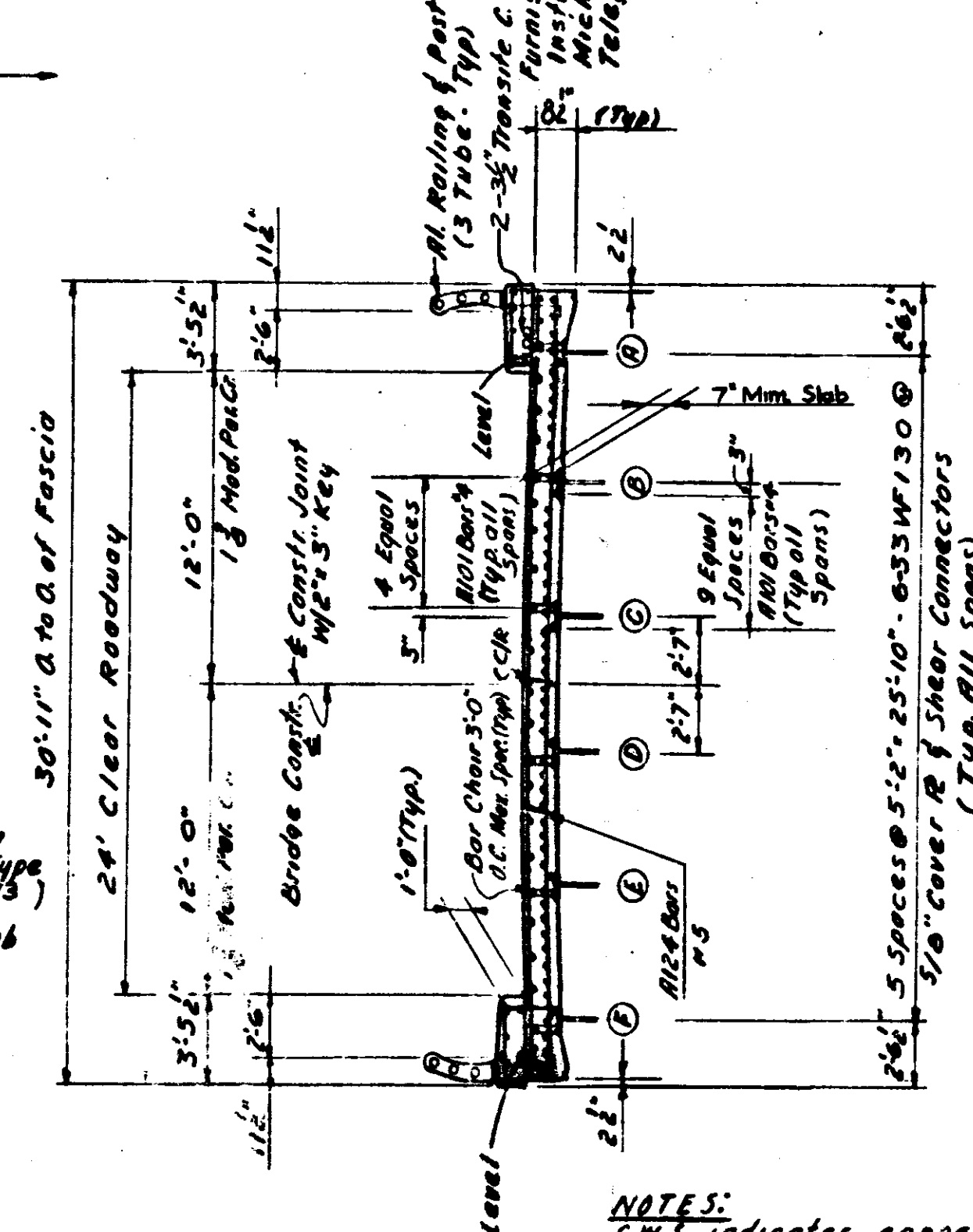
DETAIL A



DETAIL B

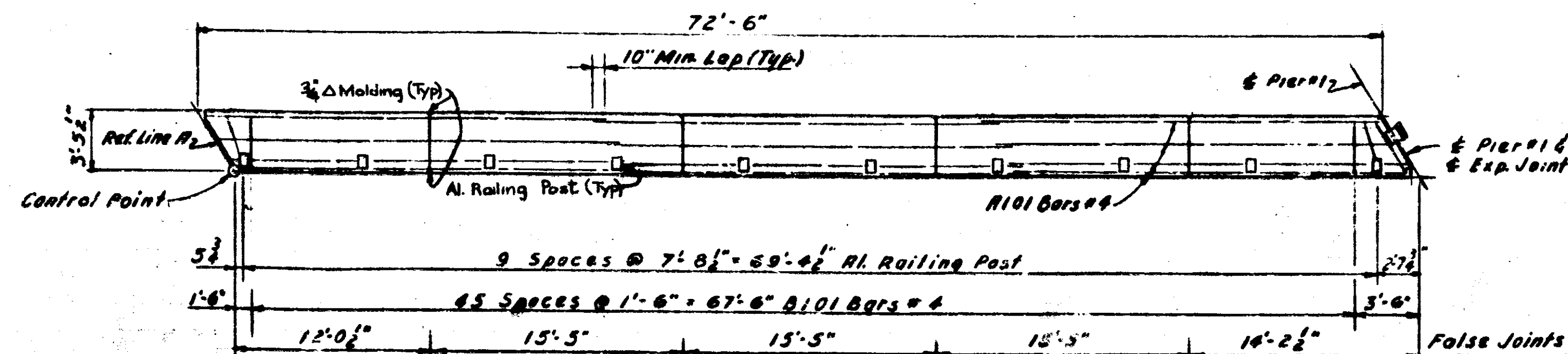


PLAN OF SLAB



SECTION THRU DECK

NOTES:
C.W.S. indicates copper waterstop
J.W.P. indicates joint waterstop
For Bevel & Molding Detail See Sheet No. R10
Edge and Groove denote Edging or Grooving with an approved tool
Sidewalk piers shall not be cast until slab concrete has attained at least 50% of its design strength as determined by table in Section 5.01.03 of the Standard Specifications.



PLAN OF SIDEWALK

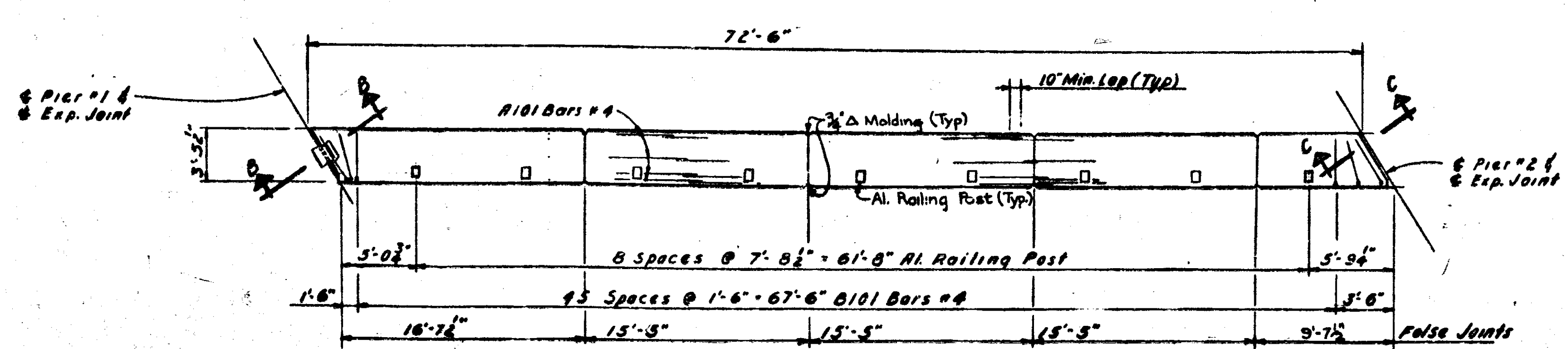
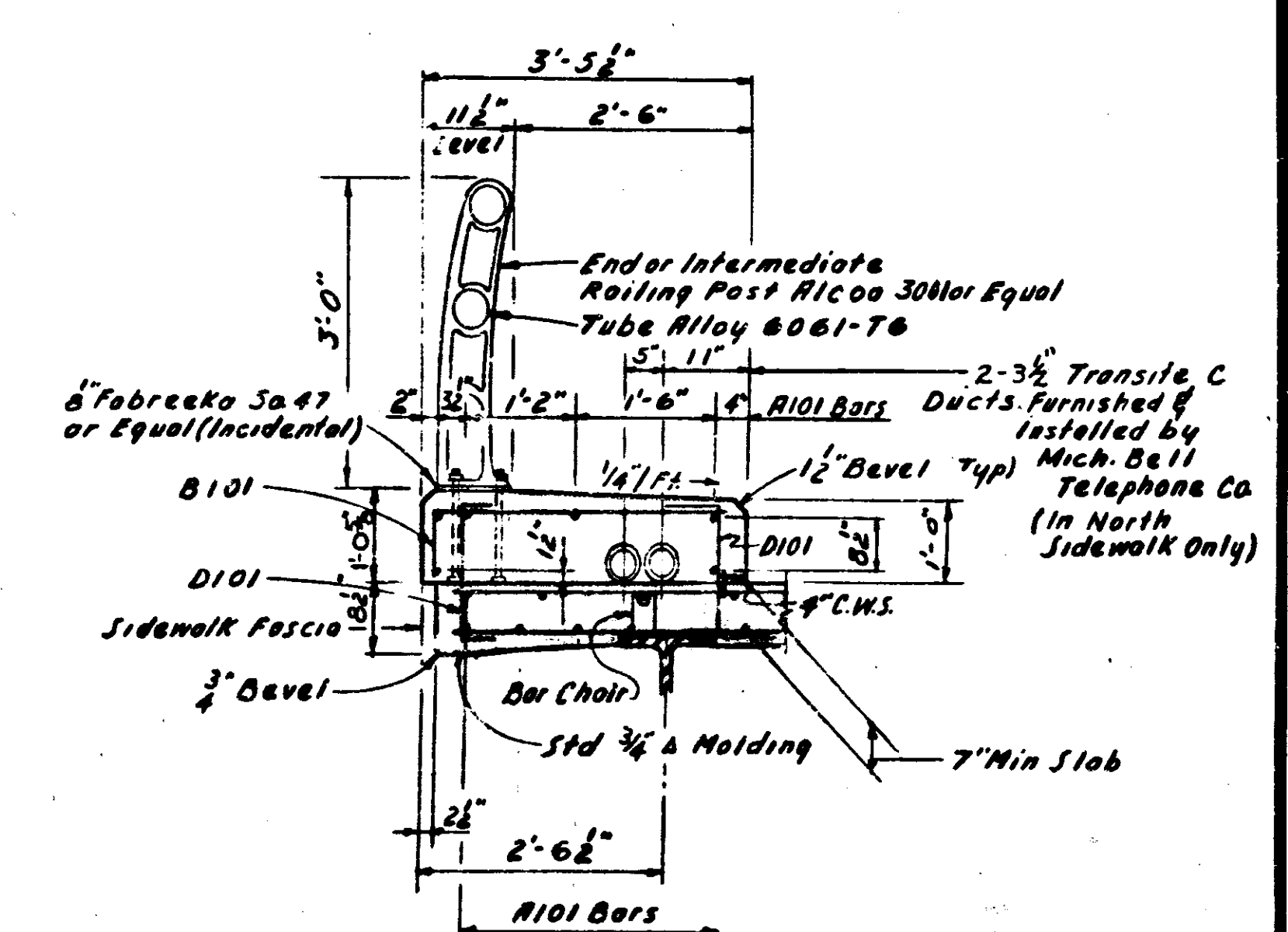
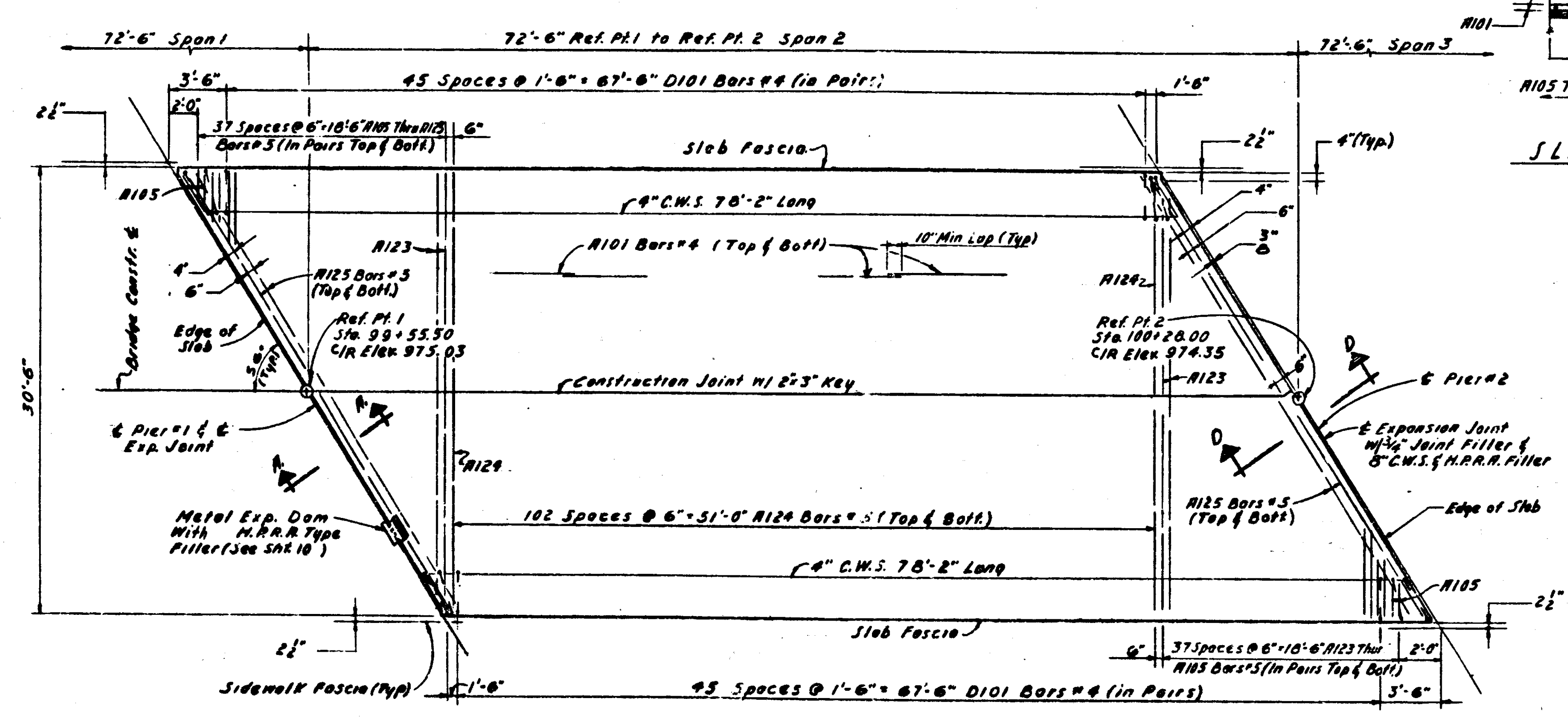
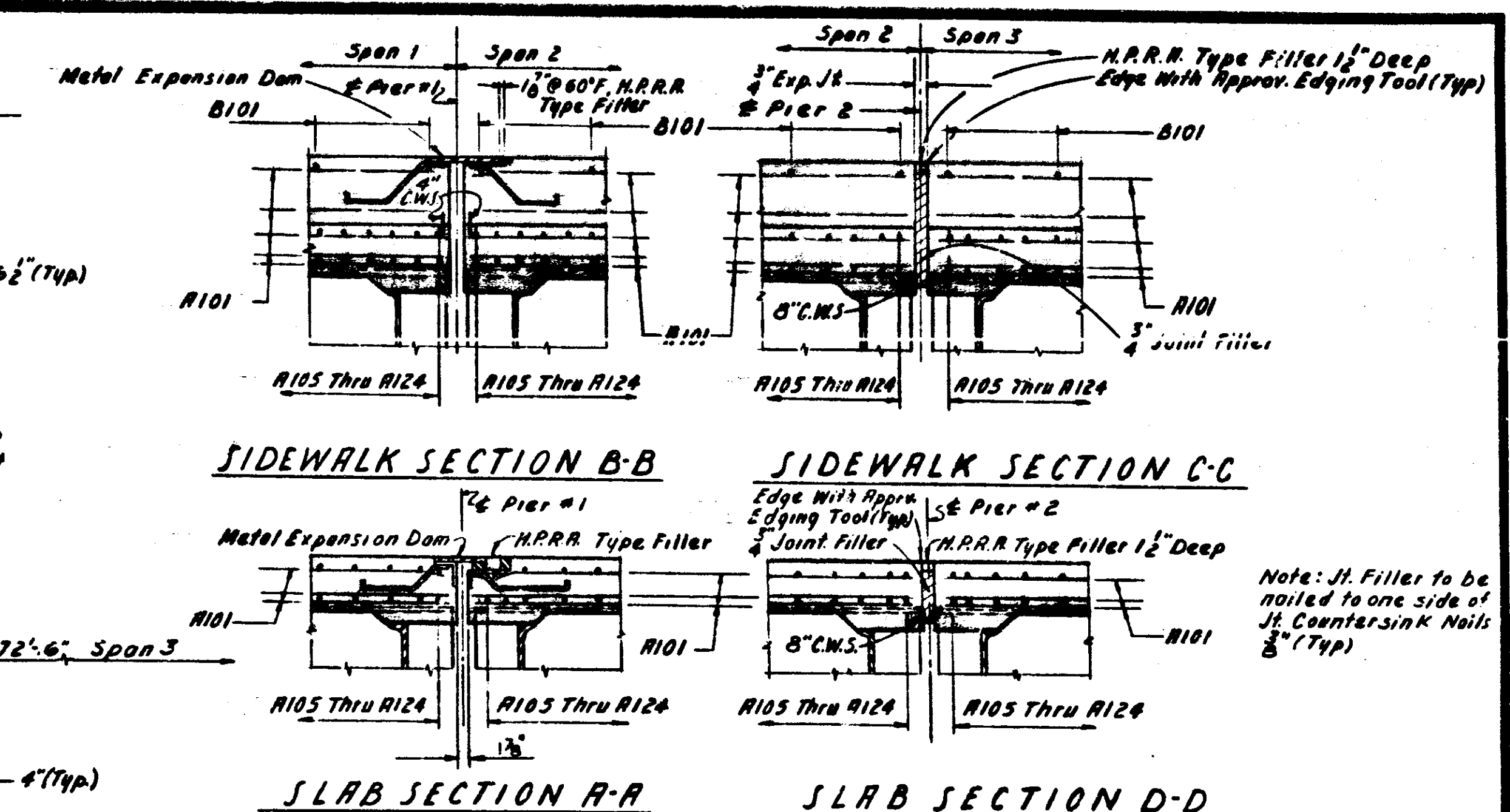
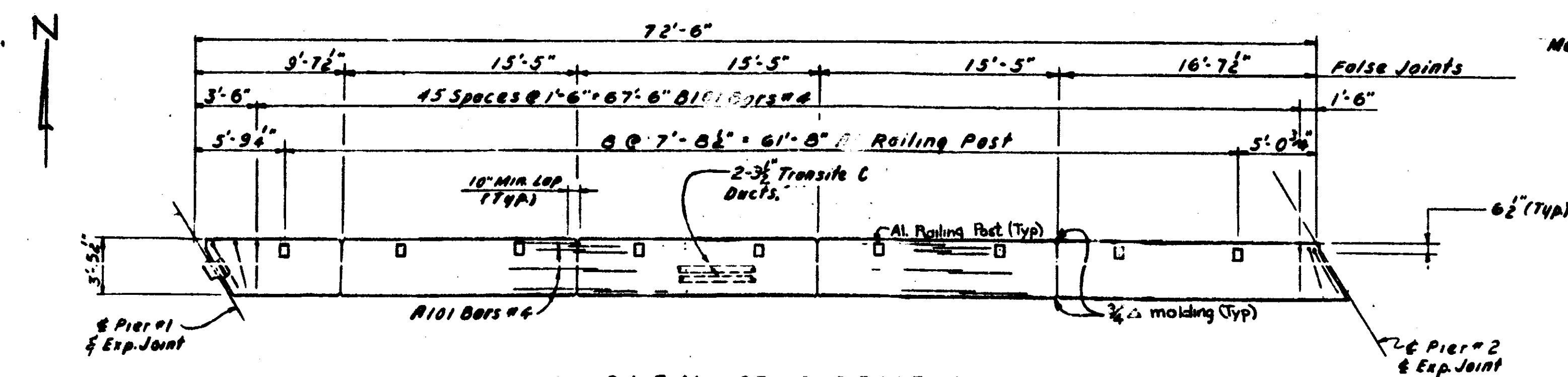
WORK THIS SHEET WITH SHEETS 8, 9 & 10

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS
SPAN 1

NO.	DESCRIPTION	DATE	BY
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

DESIGNED BY	REVIEWED BY
DRAWN BY	CHECKED BY
IN CHARGE	DATE
PROJECT NO.	DATE

B1 of 16-5-6



WORK THIS SHEET WITH SHEETS 7.9 & 10

MICHIGAN STATE HIGHWAY DEPARTMENT

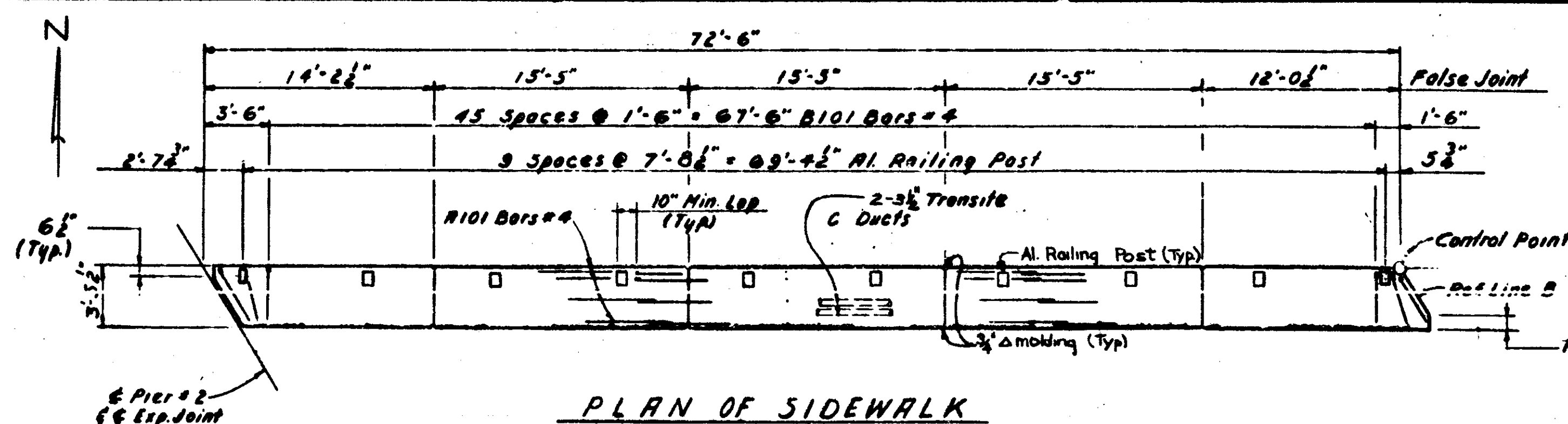
SUPERSTRUCTURE DETAILS

SPAN 2

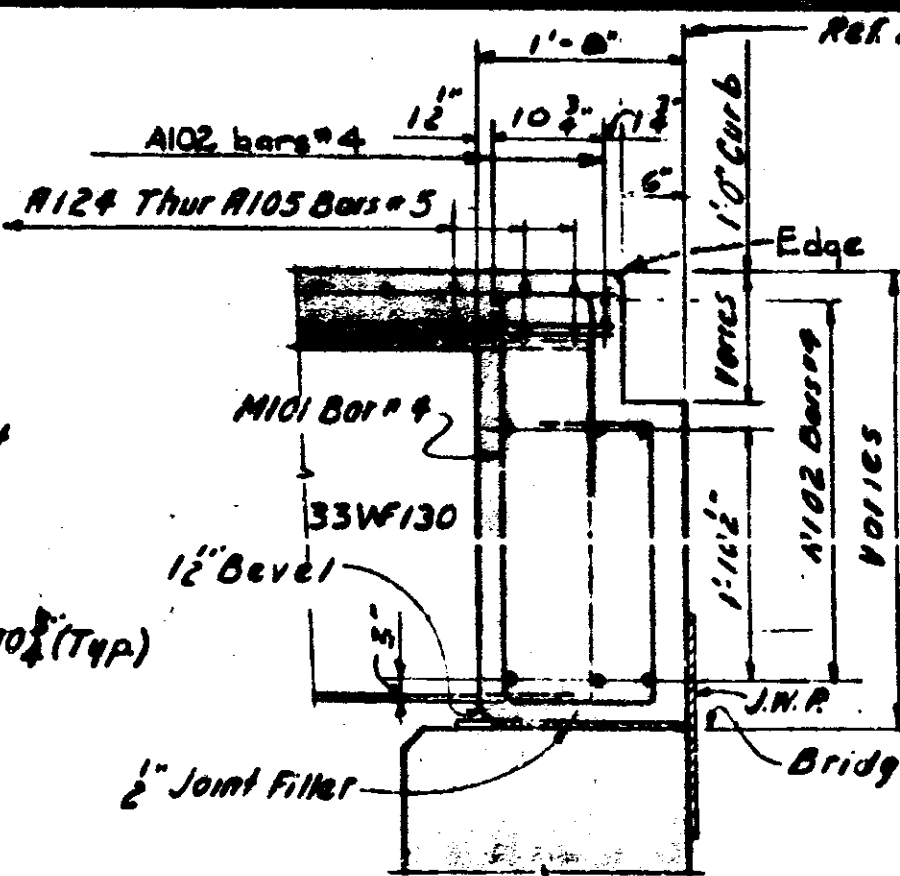
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NO.	DESCRIPTION	DATE	BY

DESIGNED BY	FOR	DATE
DRAWN BY	BY	DATE
CHECKED BY	BY	DATE

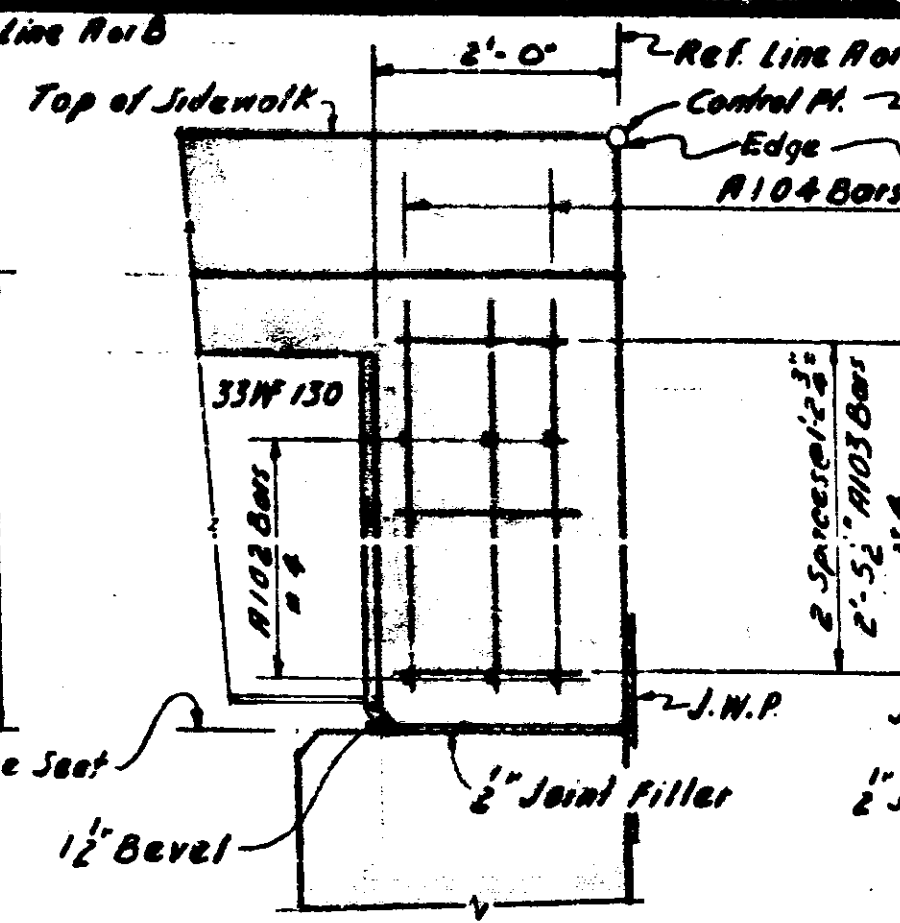
B1 of 16-5-6



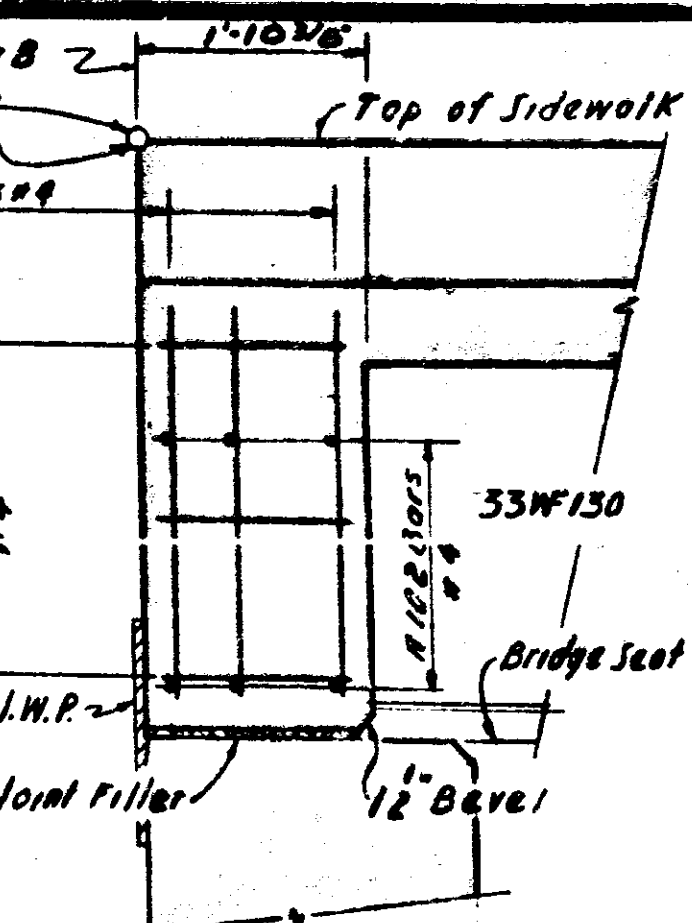
PLAN OF SIDEWALK



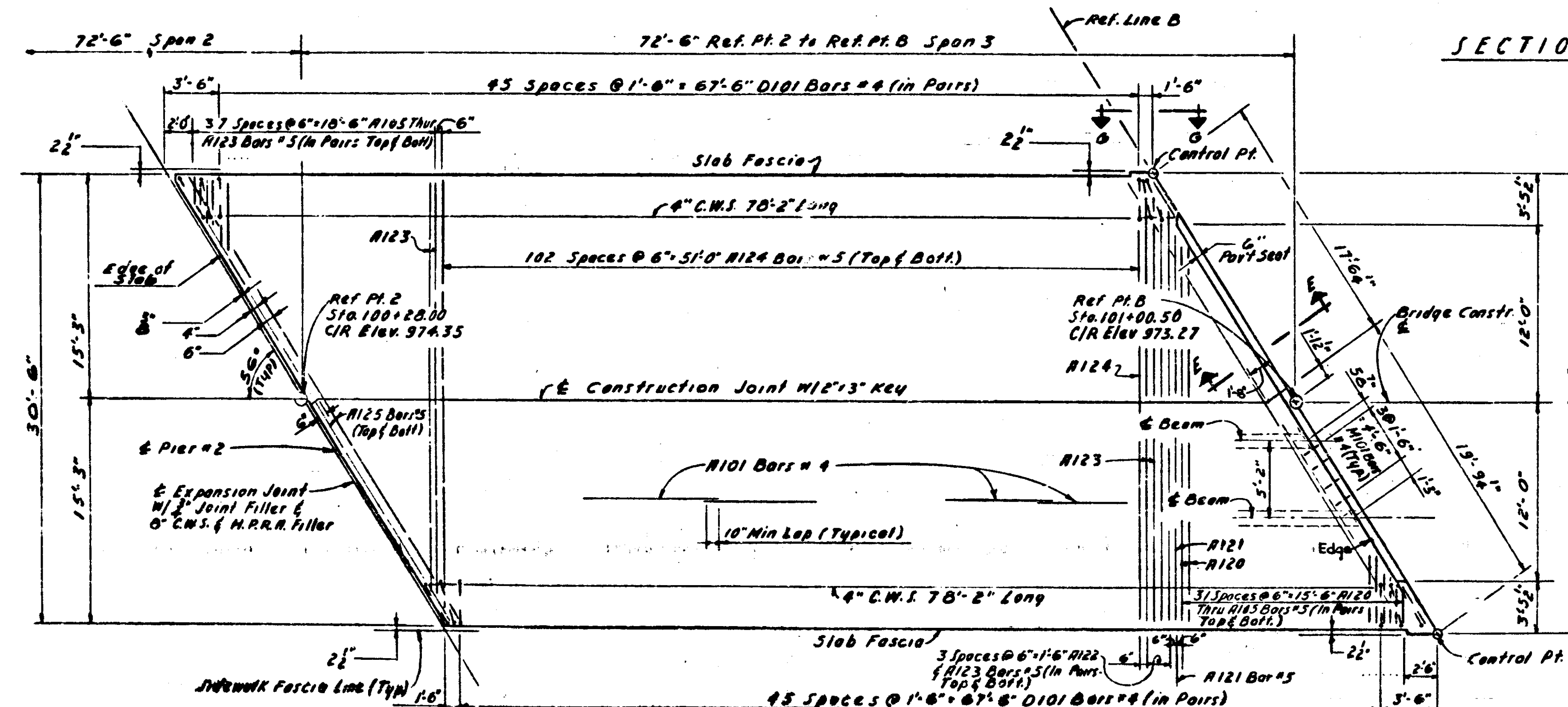
SECTION E-E



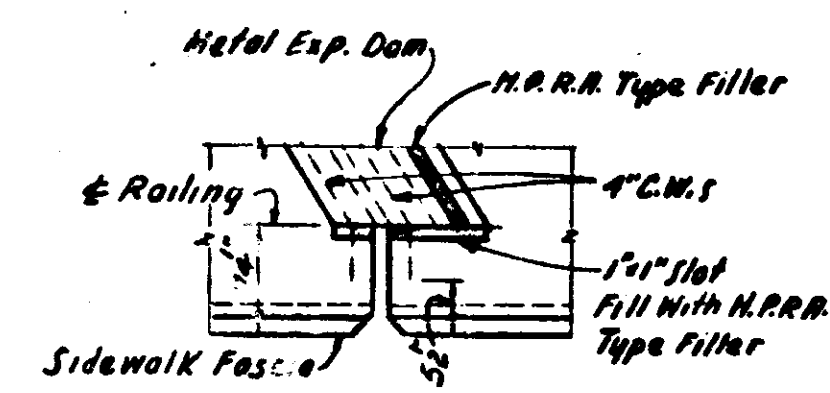
VIEW F-F



VIEW G-G



PLAN OF SLAB



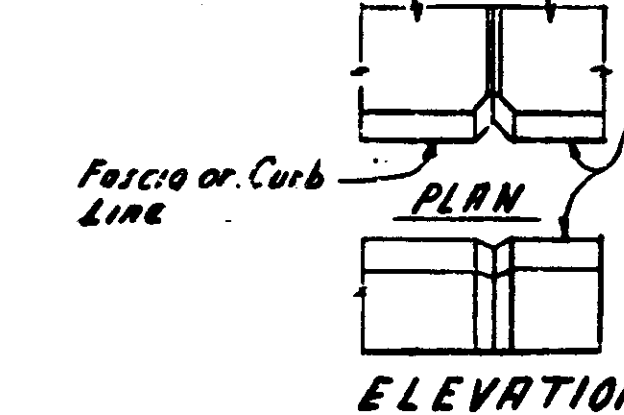
DETAIL AT END OF EXP. JOINT IN TOP OF WALK



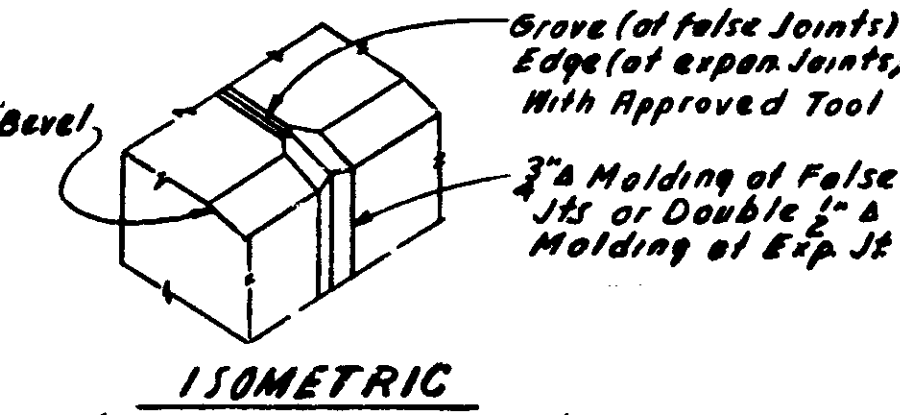
8\"C.W.I. DETAIL



4\"(1602)\"C.W.I. DETAIL

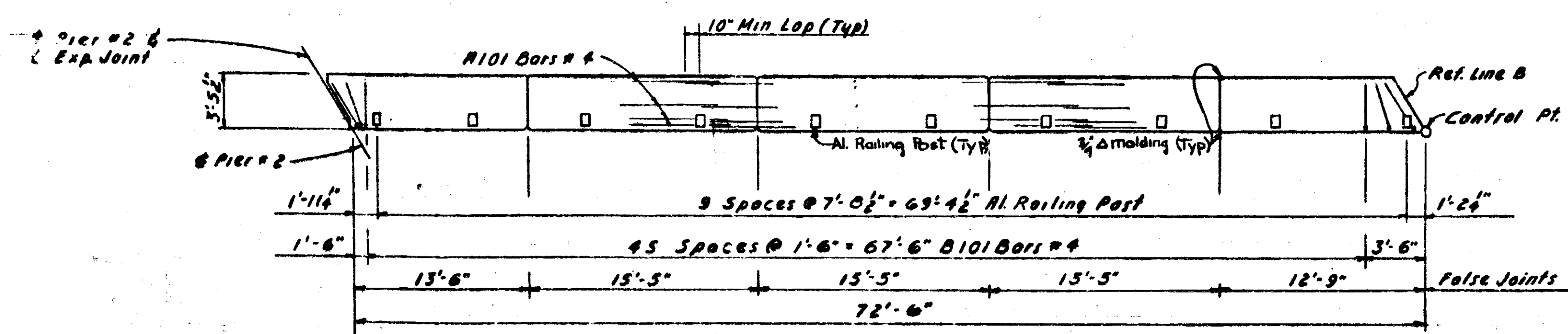


ELEVATION

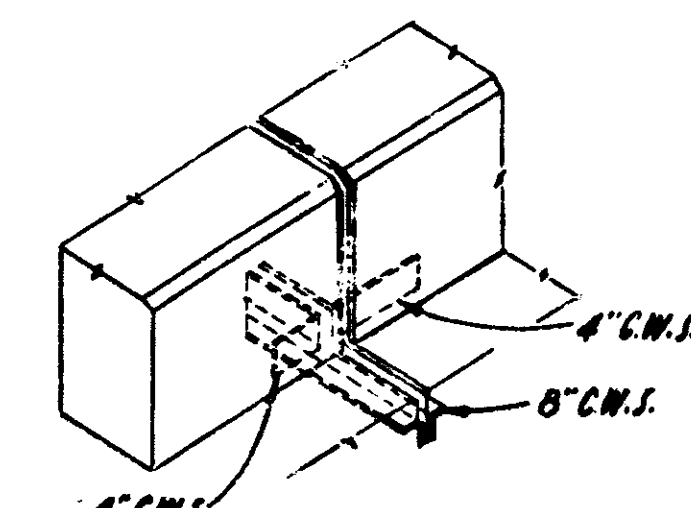


ISOMETRIC (At Fascia or Curb Line)

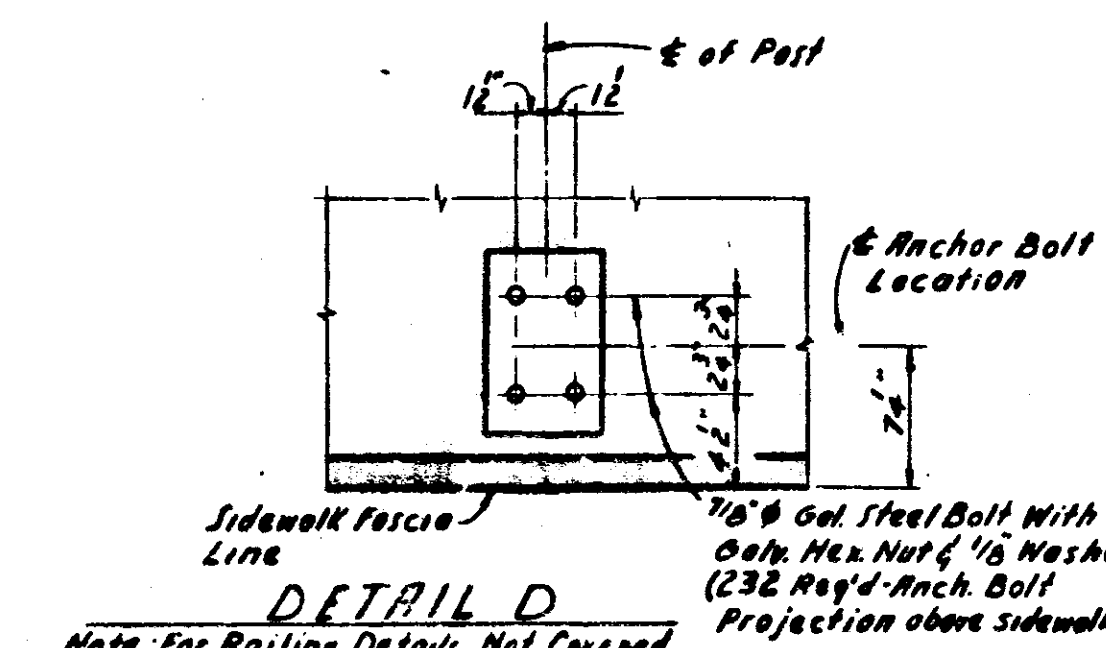
MOLDING DETAIL C



PLAN OF SIDEWALK



TYPICAL C.W.I. CONNECTION AT CURB LINE

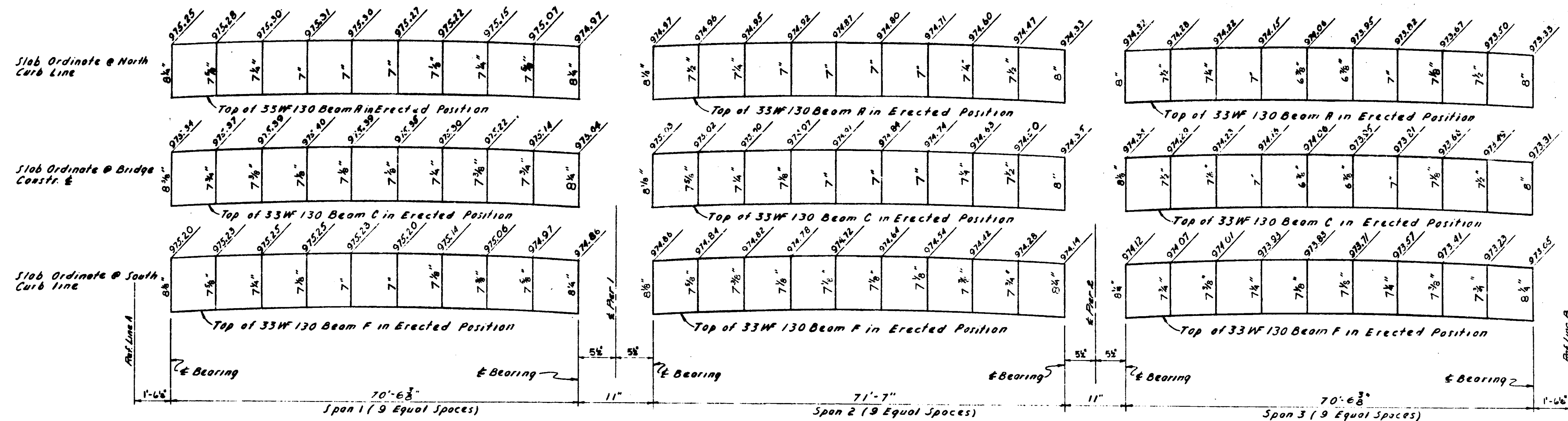


DETAIL D

Note: For Railing Details, Not Covered (See Sheet No. R10P)

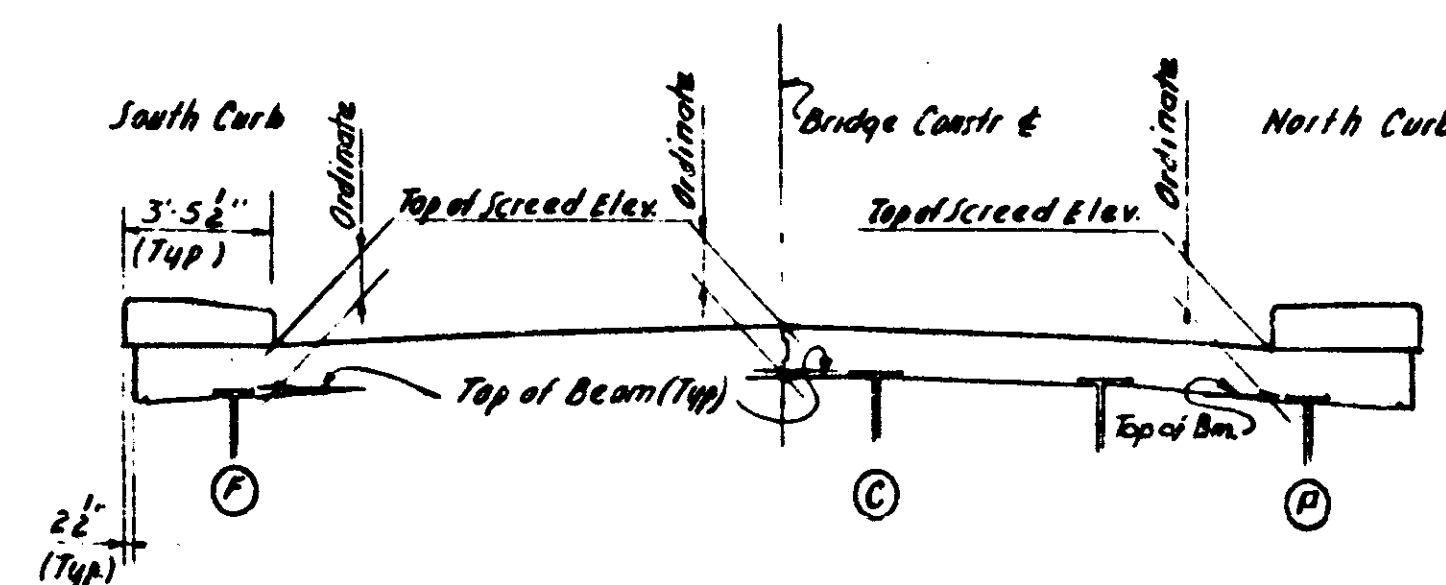
MICHIGAN STATE HIGHWAY DEPARTMENT SUPERSTRUCTURE DETAILS SPAN 3																							
<table border="1"> <thead> <tr> <th colspan="4">REVISIONS</th> </tr> <tr> <th>NO.</th> <th>DESCRIPTION</th> <th>DATE</th> <th>BY</th> </tr> </thead> <tbody> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </tbody> </table>				REVISIONS				NO.	DESCRIPTION	DATE	BY												
REVISIONS																							
NO.	DESCRIPTION	DATE	BY																				
<small>DESIGNED BY</small> RUSSELL 11-19-60 <small>DRAWN BY</small> Mitchell 10-60 <small>CHECKED BY</small> E.D.C. 11-17-60 <small>DATE</small> 11-17-60		<small>7/8\"</small> Gal. Steel Bolt With <small>Only Hex Nut & 1/8\"</small> Washer <small>(232 Reg'd-Anch. Bolt</small> <small>Projection above sidewalk 2\"</small>																					
B1 of 16-5-6																							

WORK THIS SHEET WITH SHEETS 7.0 & 10



SLAB ORDINATE DIAGRAM

NOTE: The slab ordinates shown provide for dead load deflection, crown and beam camber, and are to be measured from the top of the screed. Elevations shown are for top of screed before pouring any concrete and are based on a minimum slab thickness of 7". If other screeds are set, it checks indicates that less than the minimum thickness will be obtained, adjust screeds and expansion dams accordingly.



SECTION THROUGH DECK SHOWING LOCATION OF SCREED ELEVATIONS

MISCELLANEOUS QUANTITIES		
ITEM	UNIT	AMOUNT
Alum. Br. Rolling-Fab & Erect. (3 Tube)	Lin Ft.	435
Hot Poured Rubber Asphalt Type Filler	Lin Ft.	74
3/4" Joint Filler	Sq. Ft.	28
Copper Water Stop	Lbs	180

CONCRETE QUANTITIES - GRADE A (C.B.)				
LOCATION OF POUR	SPAN			TOTAL CU. YD.
	1	2	3	
North Sidewalk	90	90	90	270
North Rdwy Slab	300	248	29.5	567.5
South Rdwy Slab	29.5	248	30.0	567.5
South Sidewalk	95	95	95	285
GRAND TOTAL				2281

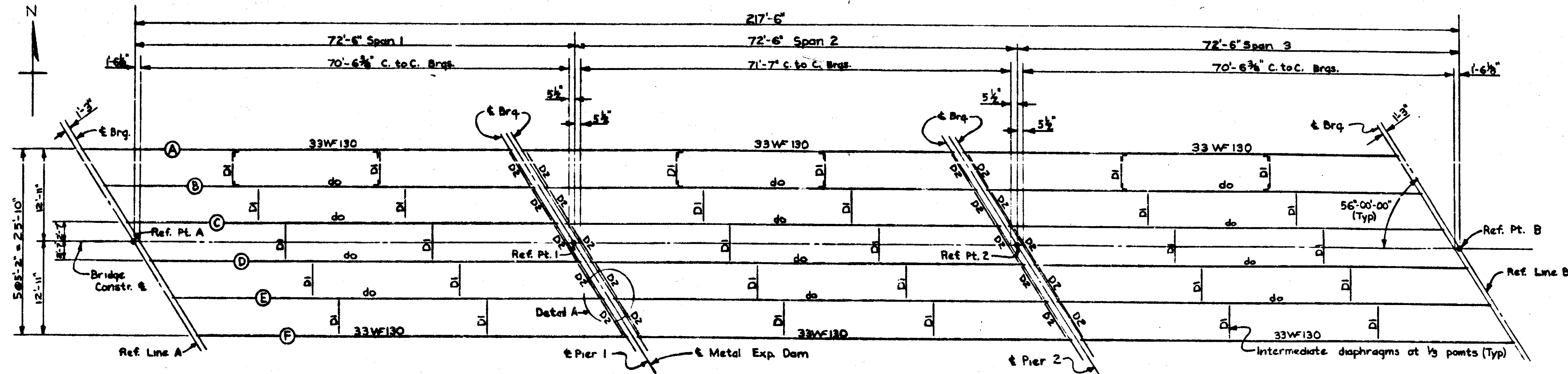
WORK THIS SHEET WITH SHEETS 7.0, 4.9

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS

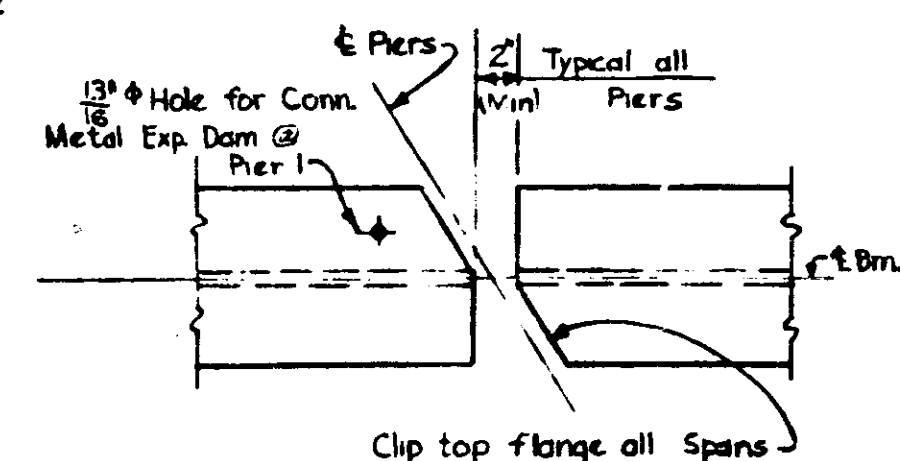
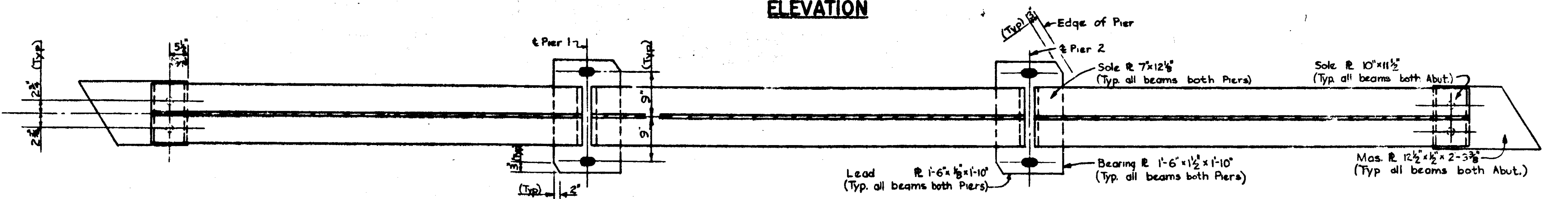
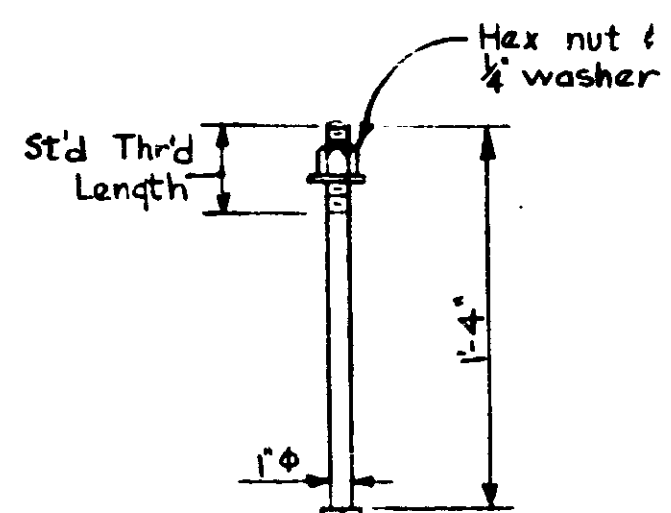
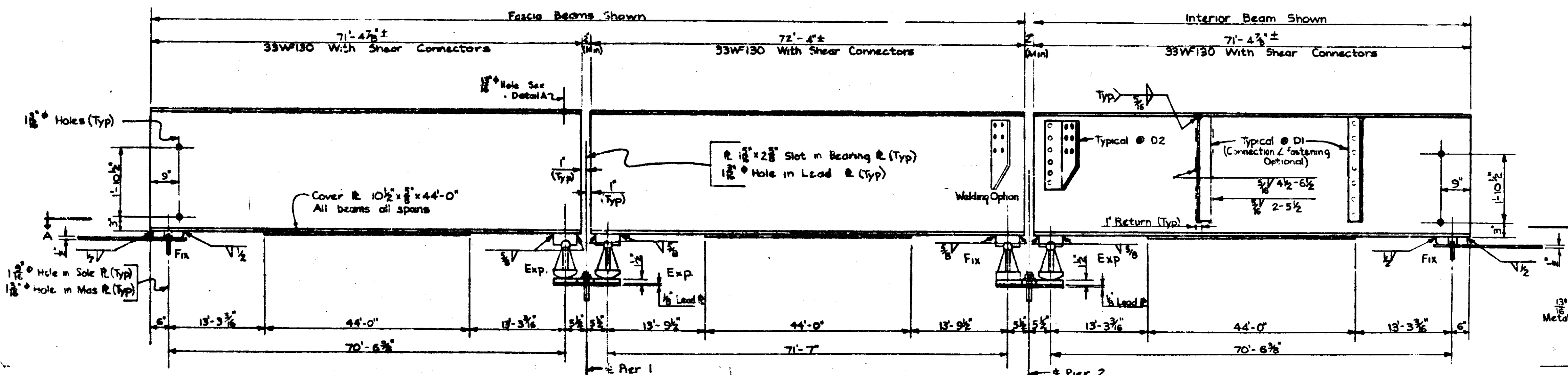
REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED BY	Russman 11-19-60
DRAWN BY	Mitchell 10-20
CHECKED BY	EGC 11-17-60
SHEET	10 of 18

B1 of 16-5-6



POSITION DOWEL
(24 Req'd for Abutments)



Note:

See Table on Sheet 12 for Sole R. thickness.

Work this sheet with sheets 12 & 13

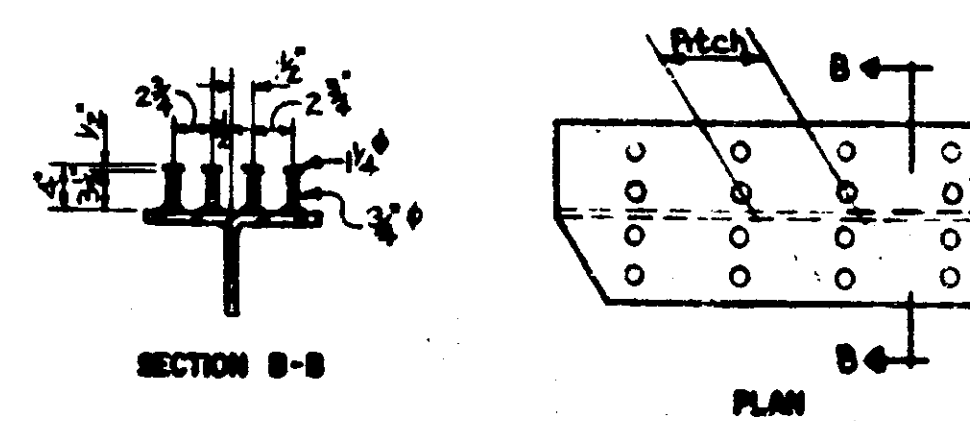
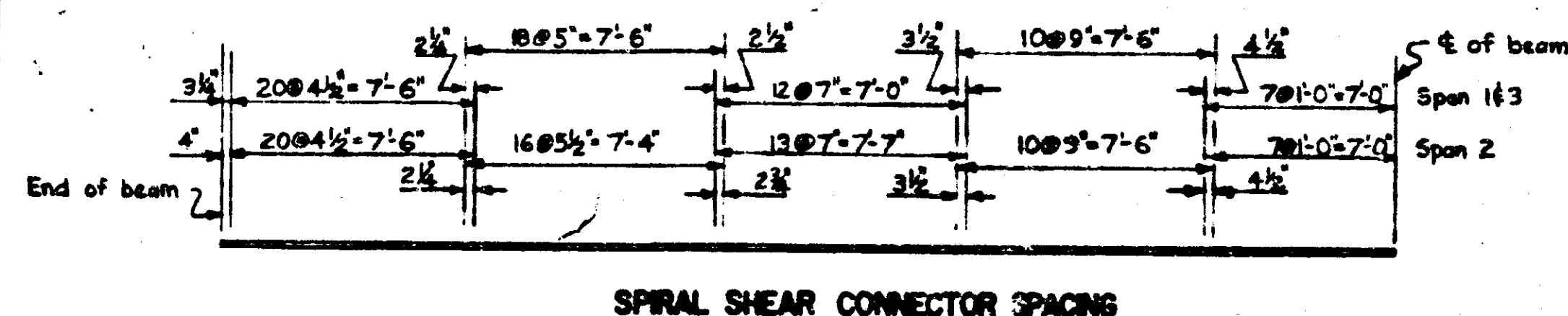
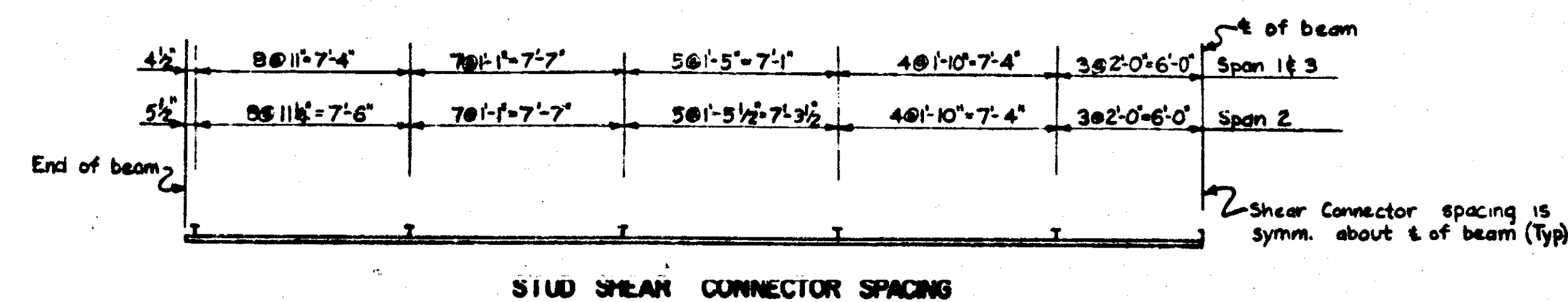
MICHIGAN STATE HIGHWAY DEPARTMENT

STRUCTURAL STEEL DETAILS

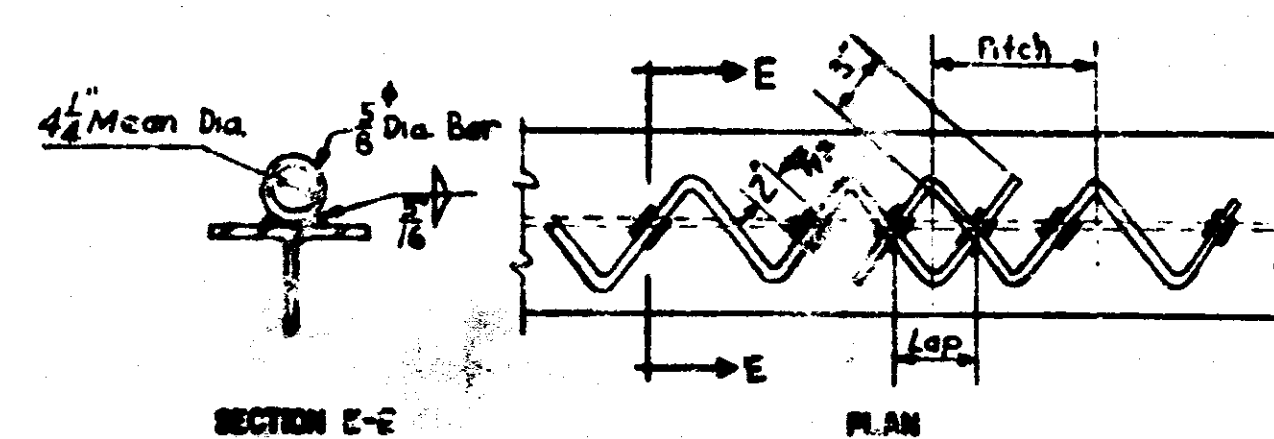
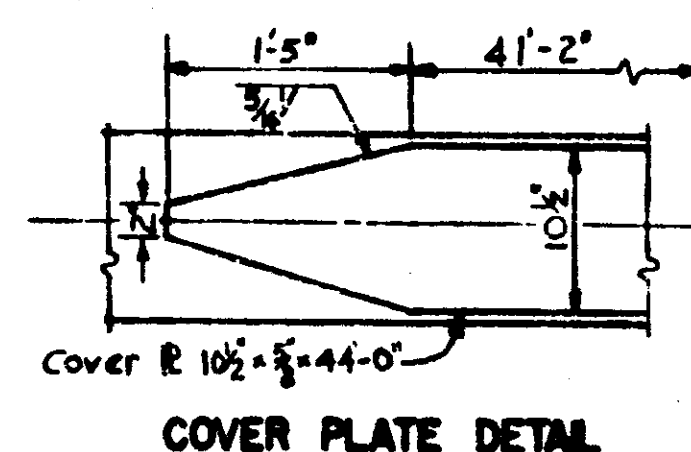
NO.	REVISIONS	DATE	BY

DESIGNED BY	Russman 11-19-60
DRAWN BY	F.O.C. 10-21-60
CHECKED BY	F.O.C. 11-1-60
DATE	11-1-60

B1 OF 16-5-6



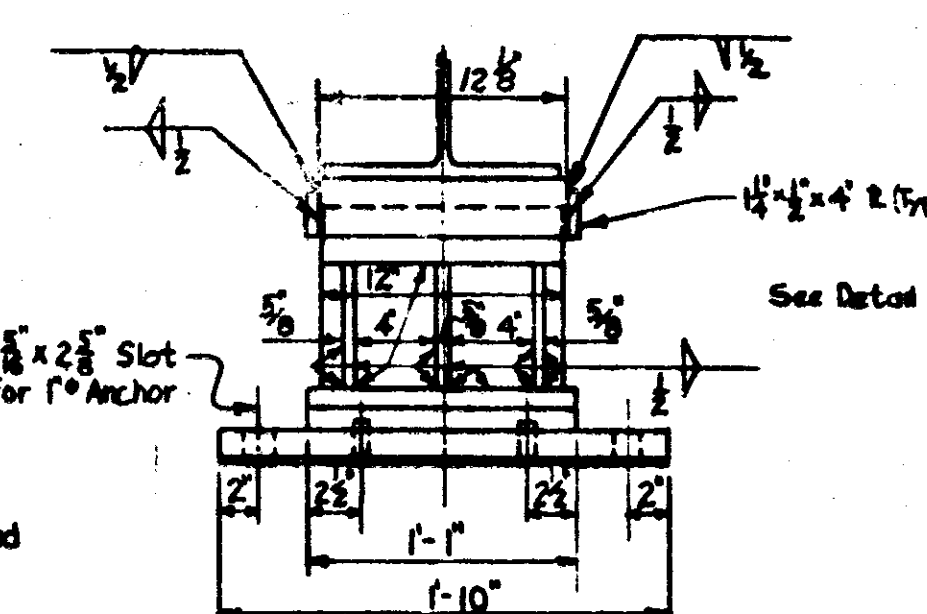
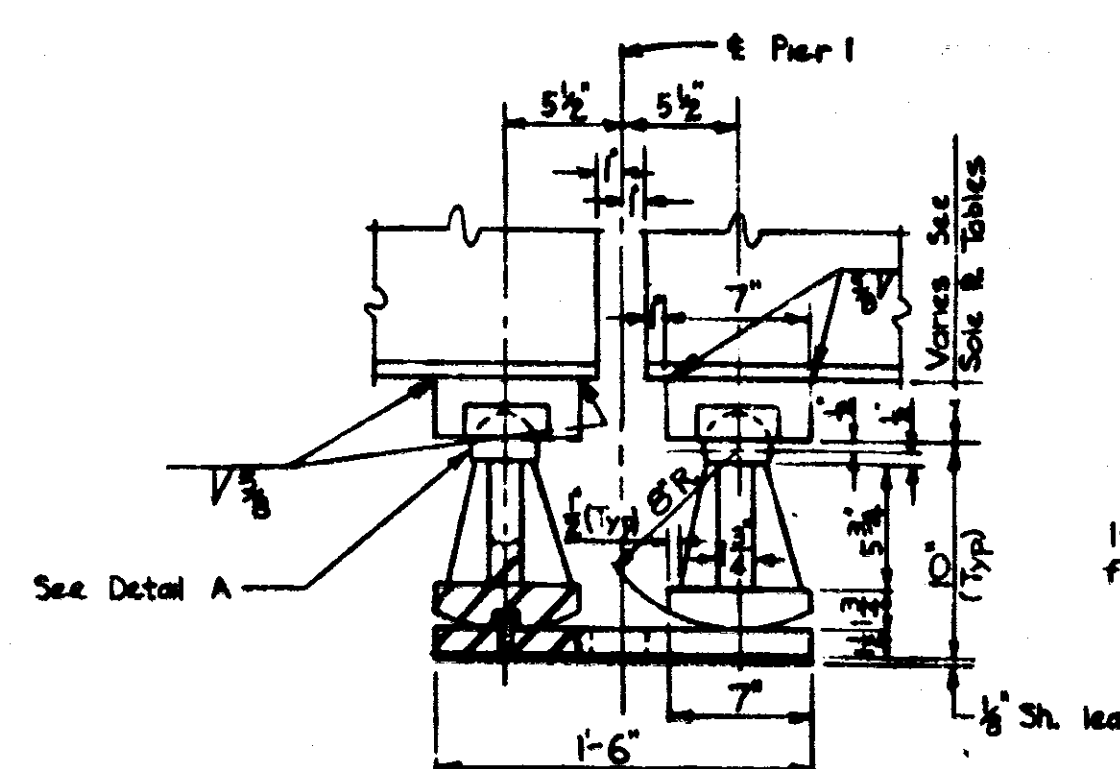
STUD SHEAR CONNECTOR DETAILS



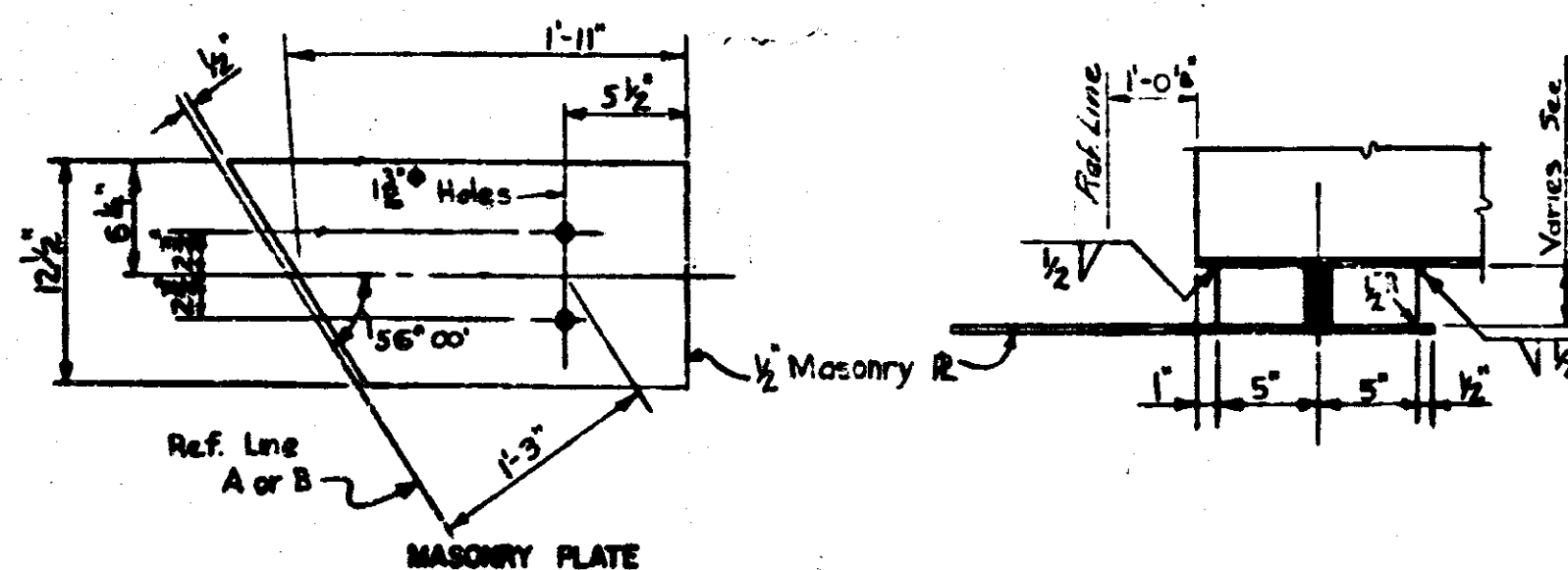
SPIRAL SHEAR CONNECTOR DETAILS

Span	Wt. Req'd
1	1320
2	1320
3	1320
Totals	3960

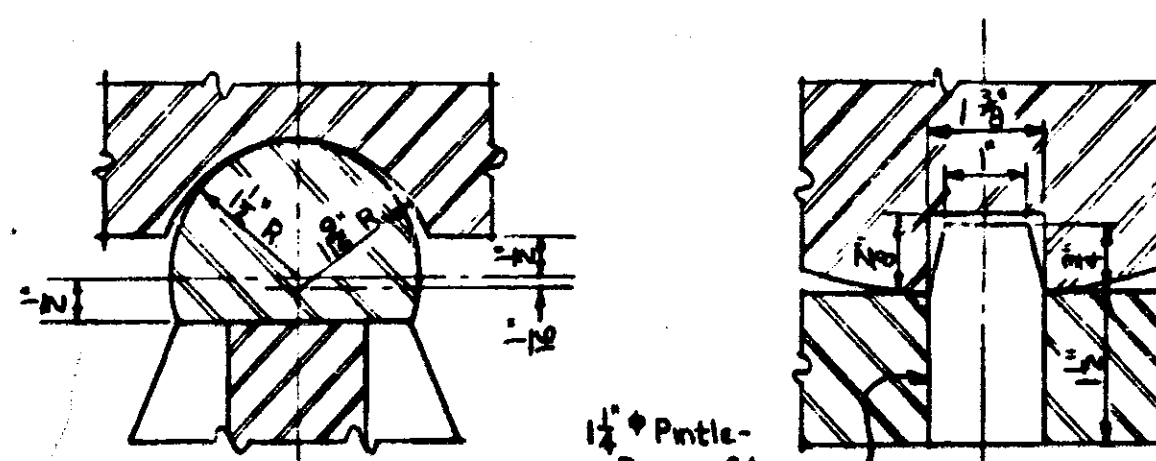
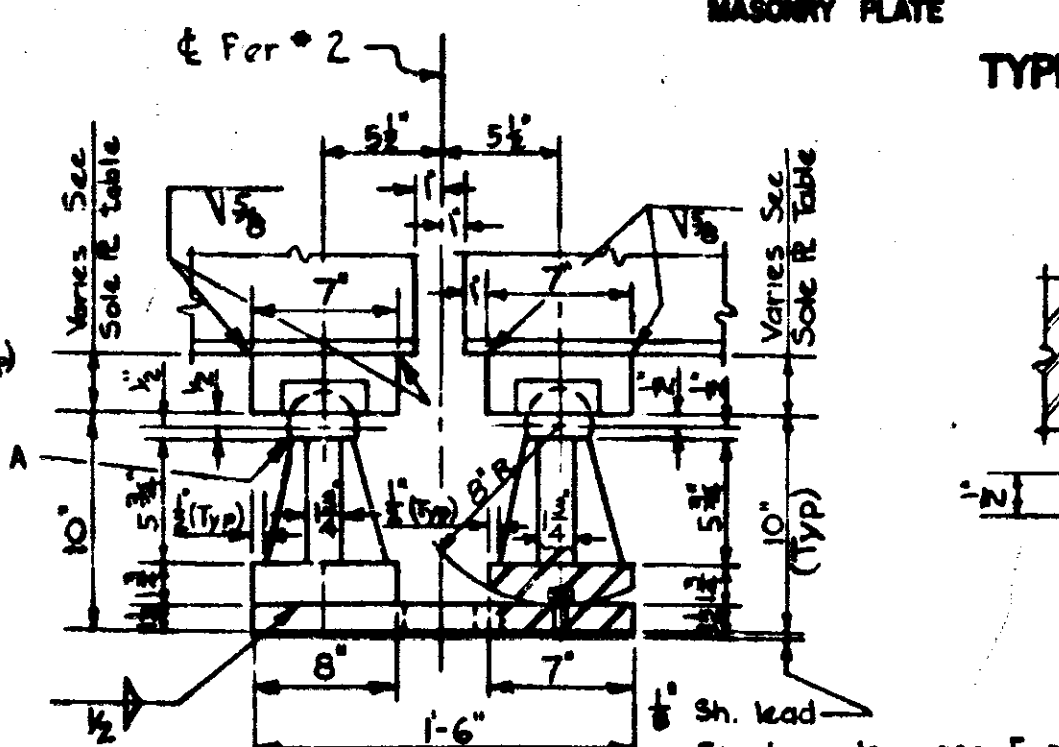
Span	Weight (lb.)
1	1140.0
2	1132.0
3	1140.0
Total	3412.0



TYPICAL EXPANSION & FIXED BEARING AT PIER 2

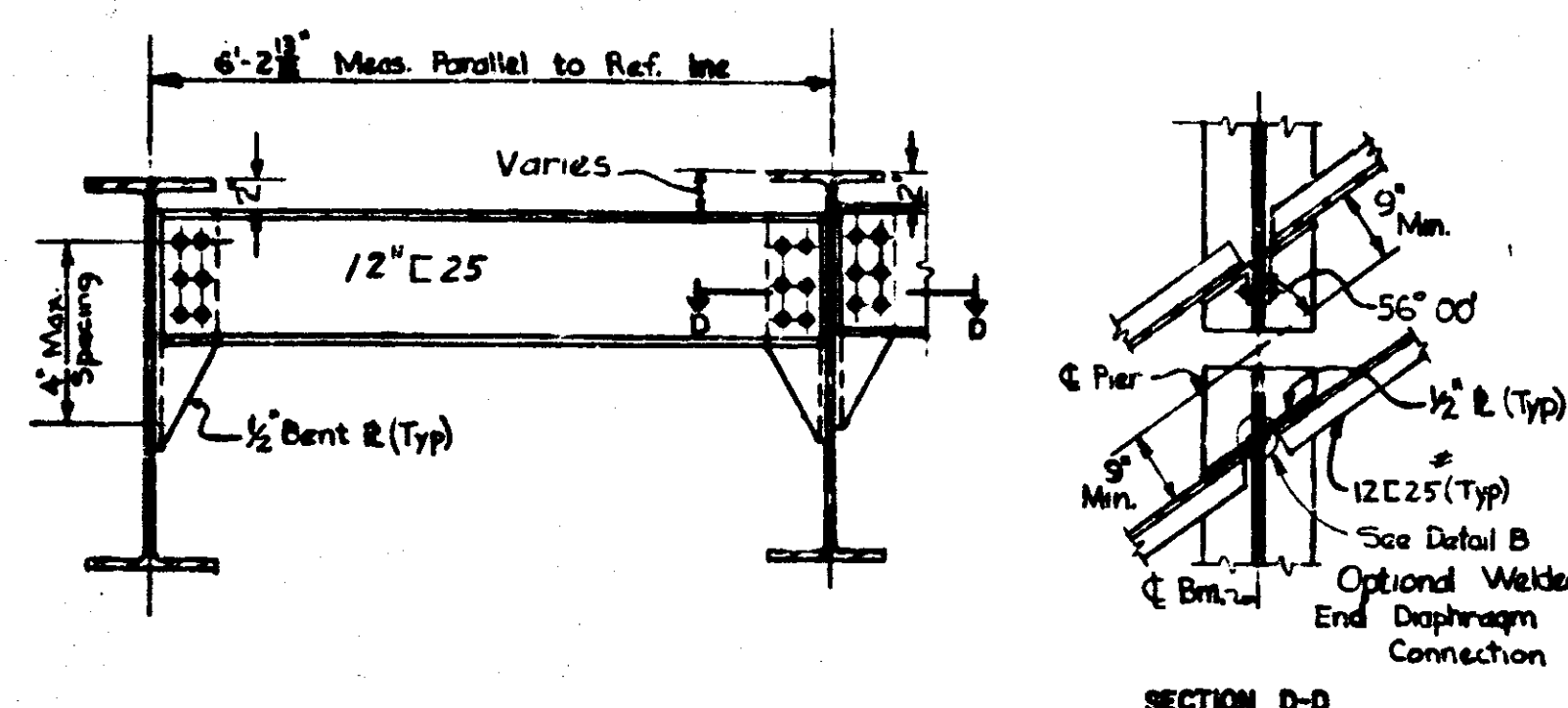
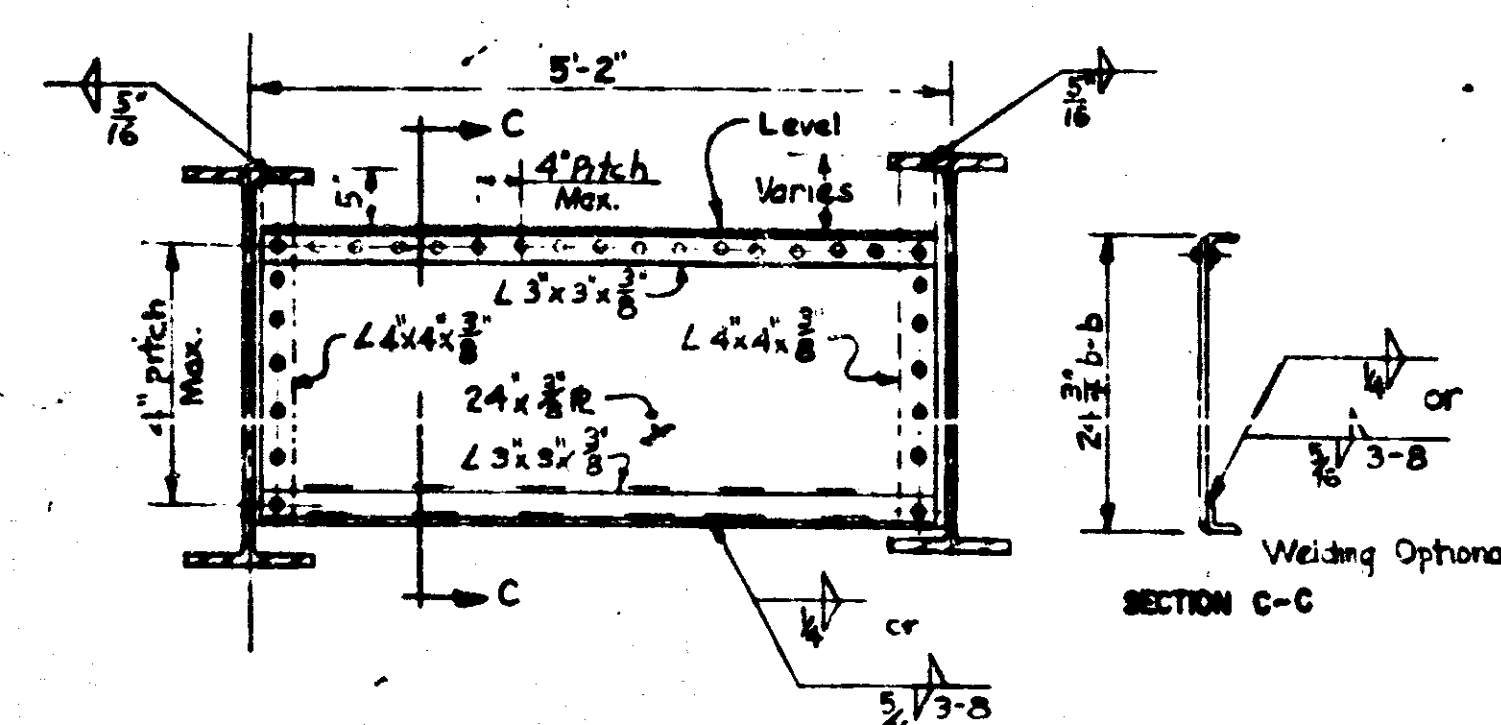


TYPICAL BEARING AT ABUTMENTS



DETAIL A

PINTLE DETAIL



TYPICAL END DIAPHRAGM (D2)
(20 Req'd)

SOLE PLATE THICKNESS						
BEAM	Span*1 Abut A	Span*1 Pier*1	Span*2 Pier*1	Span*2 Pier*2	Span*3 Pier*2	Span*3 Abut B
A	2 1/2	3 3/8	3 3/8	4 1/8	4 1/8	5 1/8
B	2 3/4	3 1/2	3 1/2	4 1/8	4 1/2	5 1/8
C	3 1/2	4 1/8	4 1/8	5	4 1/8	5 1/8
D	3 3/8	3 3/8	3 3/8	4 1/2	4 1/8	4 1/8
E	2 1/2	2 3/8	2 3/8	3 1/8	2 1/8	3 1/8
F	2 1/8	2 1/8	2	2 1/4	2 1/8	2

* Bevel all sole plates of Abut. B $\frac{1}{4}"$ per foot. $\frac{1}{4}"$

Notes:

Field Connections: Field connections unless otherwise noted shall be bolted with high strength bolts.

Fabrication: Michigan State Highway Department's Standard Specifications for Road & Bridge Construction-1960 Edition.

Design: Michigan State Highway Department's Specifications for the design of Highway Bridges 1958 Edition (HIS-44 Loading).

Shop Connections: All shop connections shall be welded or riveted as shown on the plans.

Rivets or High-Strength Bolts: $\frac{3}{4}"$ Dia.

Open Holes: Open holes for rivets or high-strength bolts shall be $\frac{1}{2}"$ Dia. unless otherwise noted.

Shop Paint: In addition to the shop paint provisions of the Standard Specifications, the top surfaces of masonry plates shall be coated in accordance with requirements for machine finished surfaces.

Metal expansion dam shall not be painted in the shop except as noted on plans.

Camber: Beams in span 1, 2 & 3 shall be given a camber of $3\frac{1}{8}"$ (maximum ordinate) in the mill.

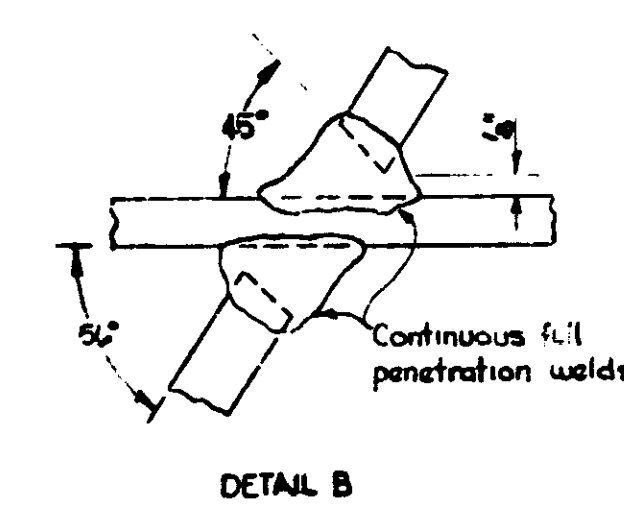
Sole plates: Sole plates 3' or more in thickness may be built up by welding together plates not less than $\frac{1}{2}"$ in thickness. Edges must be beveled $\frac{1}{4}"$ and welded with a continuous weld for the full perimeter. Welds shall be ground flush with faces of plate.

Field Paint: Field painting shall consist of one complete coat of painting Mixture 2A & one complete coat of painting Mixture 5B.

All beams & cover plates in spans 1, 2 & 3 shall conform to the requirement for welding (A.S.T.M. A-373). All other steel shall be A-7.

The Quantity Structural Steel-Fabrication and Erection Includes:

A7 Steel	21,946 lbs	Field painting	Lump Sum
A373 Steel	185,500 lbs	Shear Connectors	Lump Sum
Lead Plates	234 lbs		
Total	207,680 lbs	Structural Steel-Fab & Erection	



Work This sheet with Sheets 11 & 13

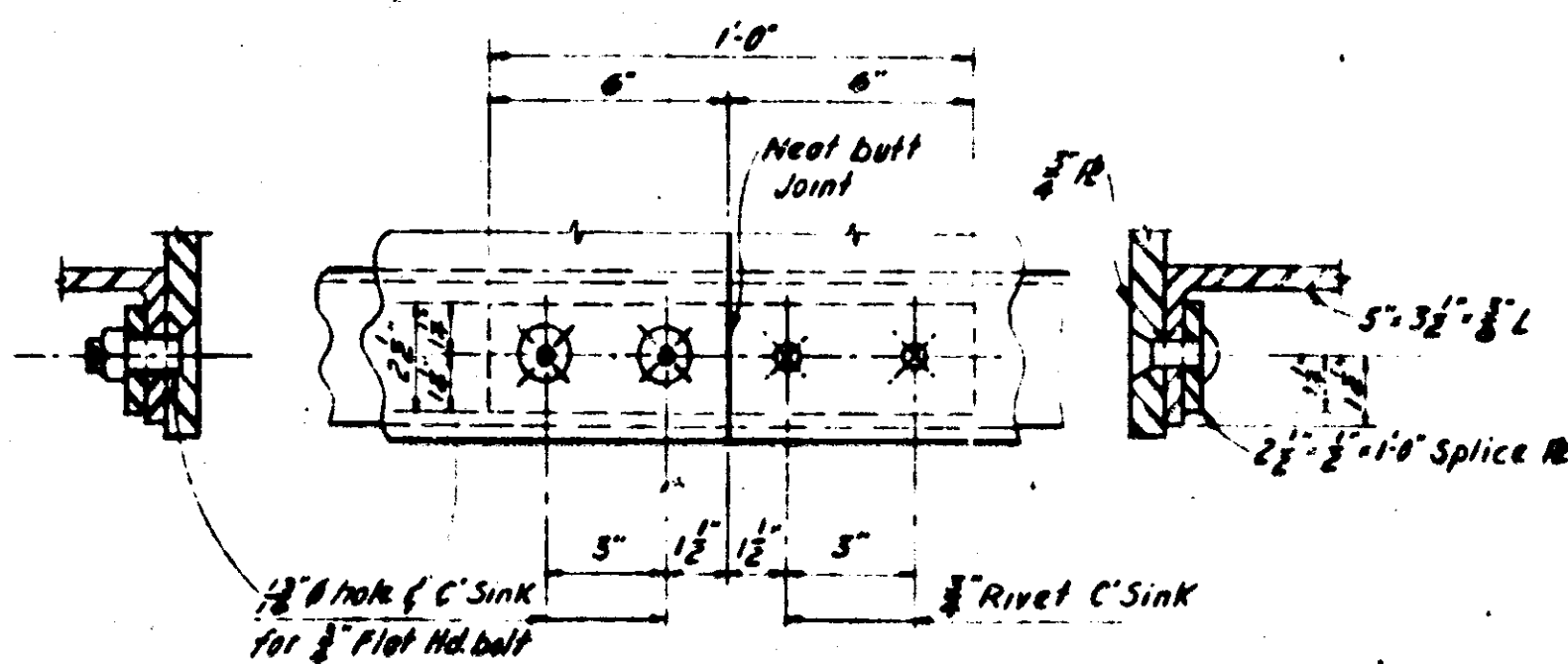
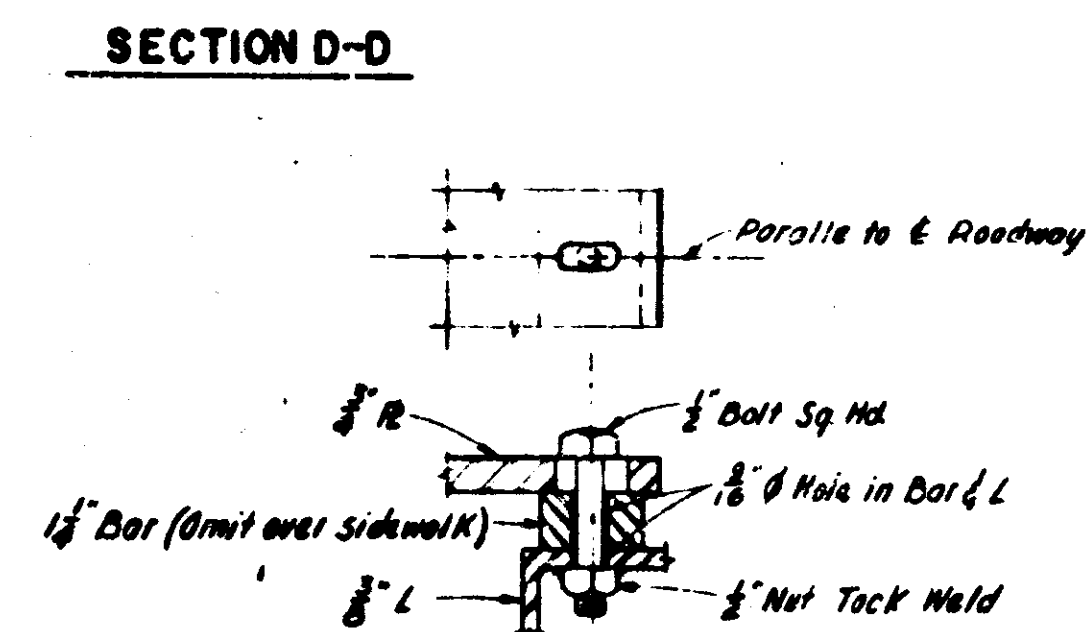
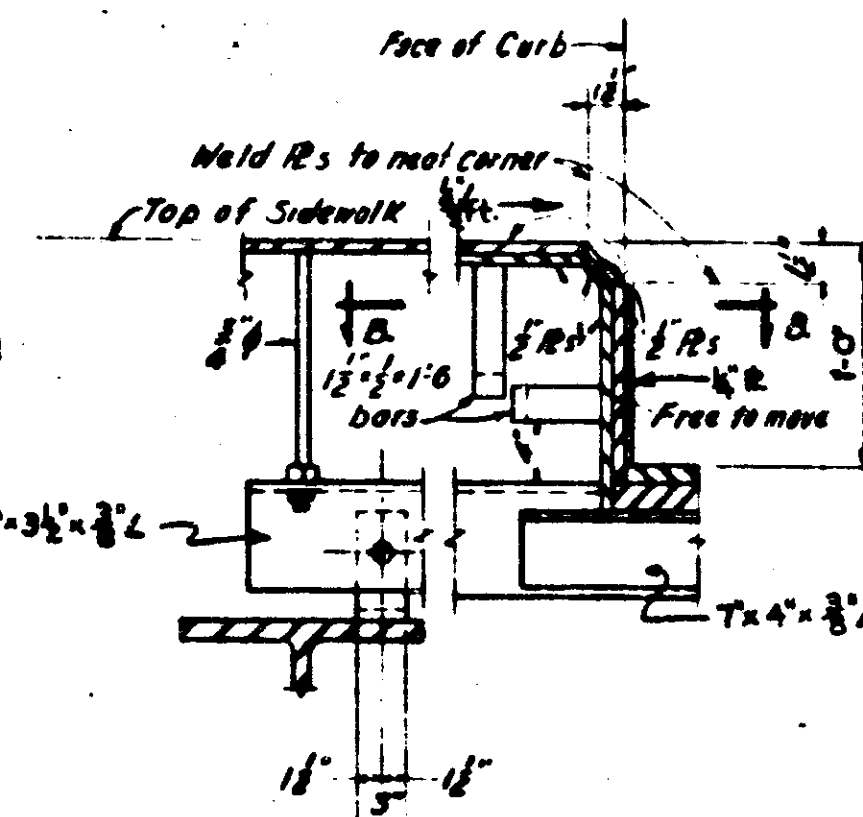
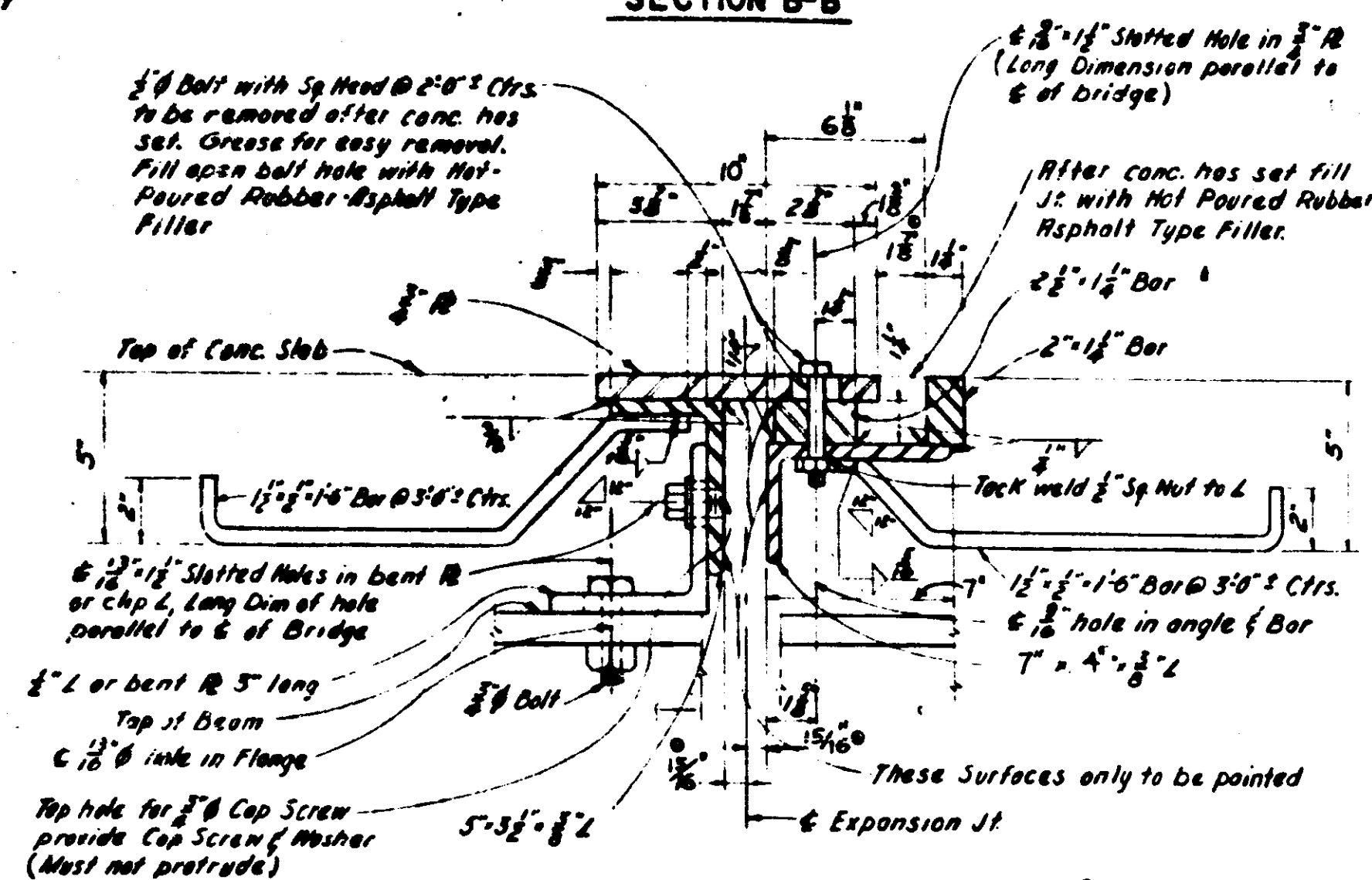
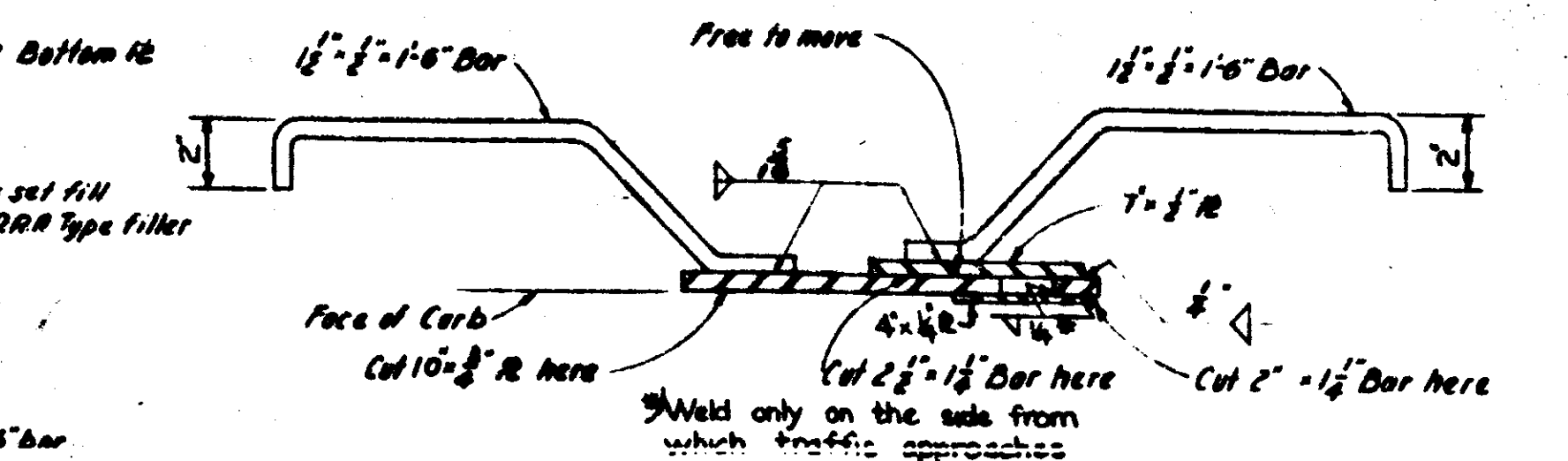
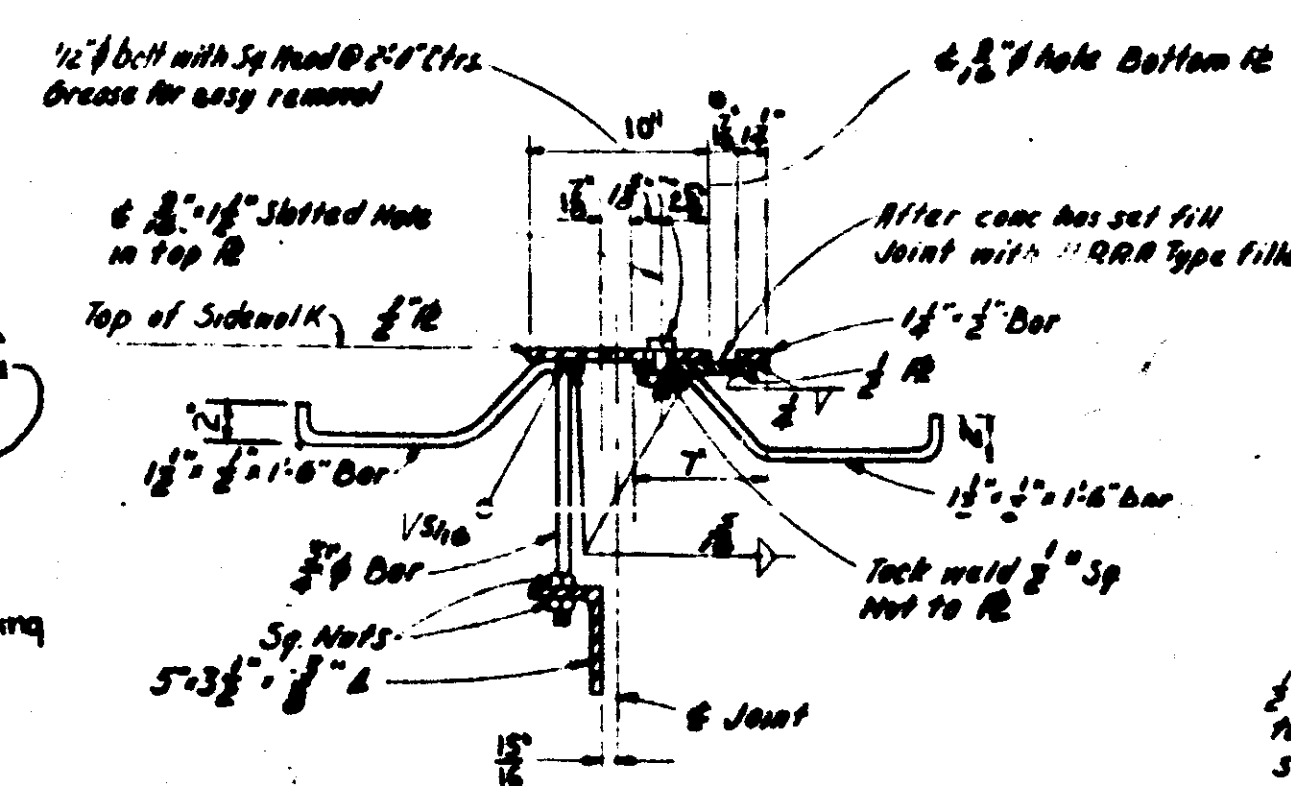
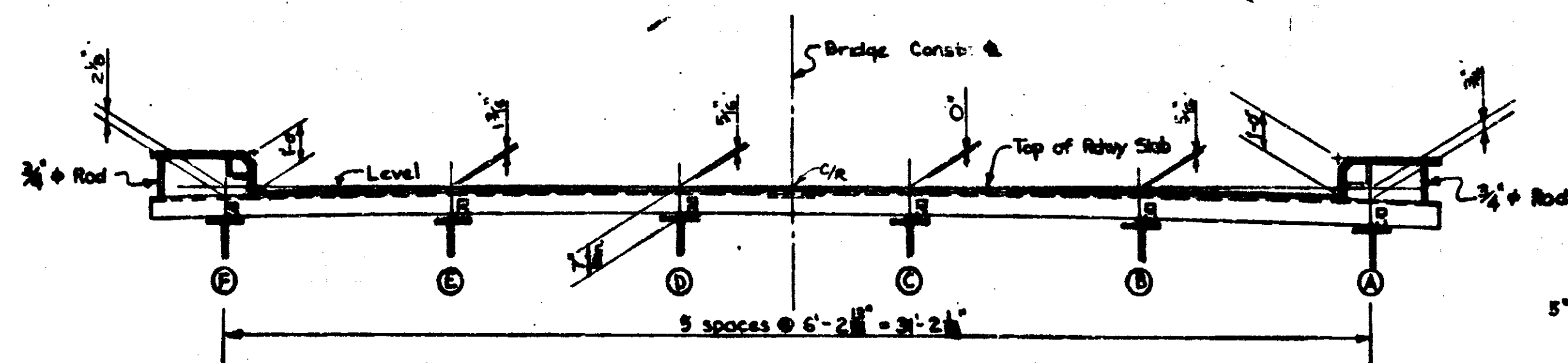
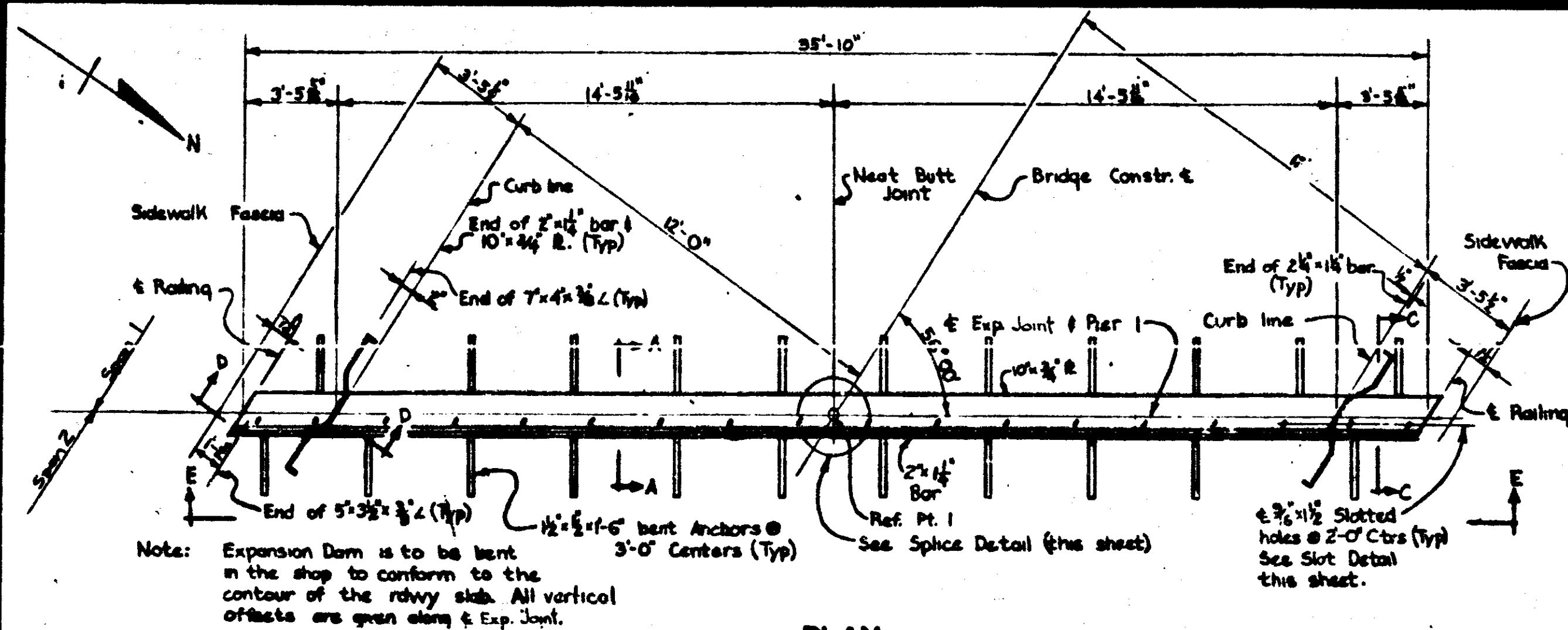
MICHIGAN STATE HIGHWAY DEPARTMENT

STRUCTURAL STEEL DETAILS

NO.	DESCRIPTION	DATE	BY

ISSUED BY: *Russman* 11-15-60
 DRAWN BY: *F.O.C.* 10-20-60
 CHECKED BY: *R.D.H.* 11-17-60
 SHEET: **12 OF 14**

B1 OF 16-5-6



Work This Sheet With Sheets No. 11 & 12

Note: Total weight of Expansion Dam=215lbs (Included in weight of structural steel-Fabrication & Erection-Sht.12)

MICHIGAN STATE HIGHWAY DEPARTMENT

EXPANSION DAM DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED BY	REVISION	DATE
BY		
CHECKED BY		

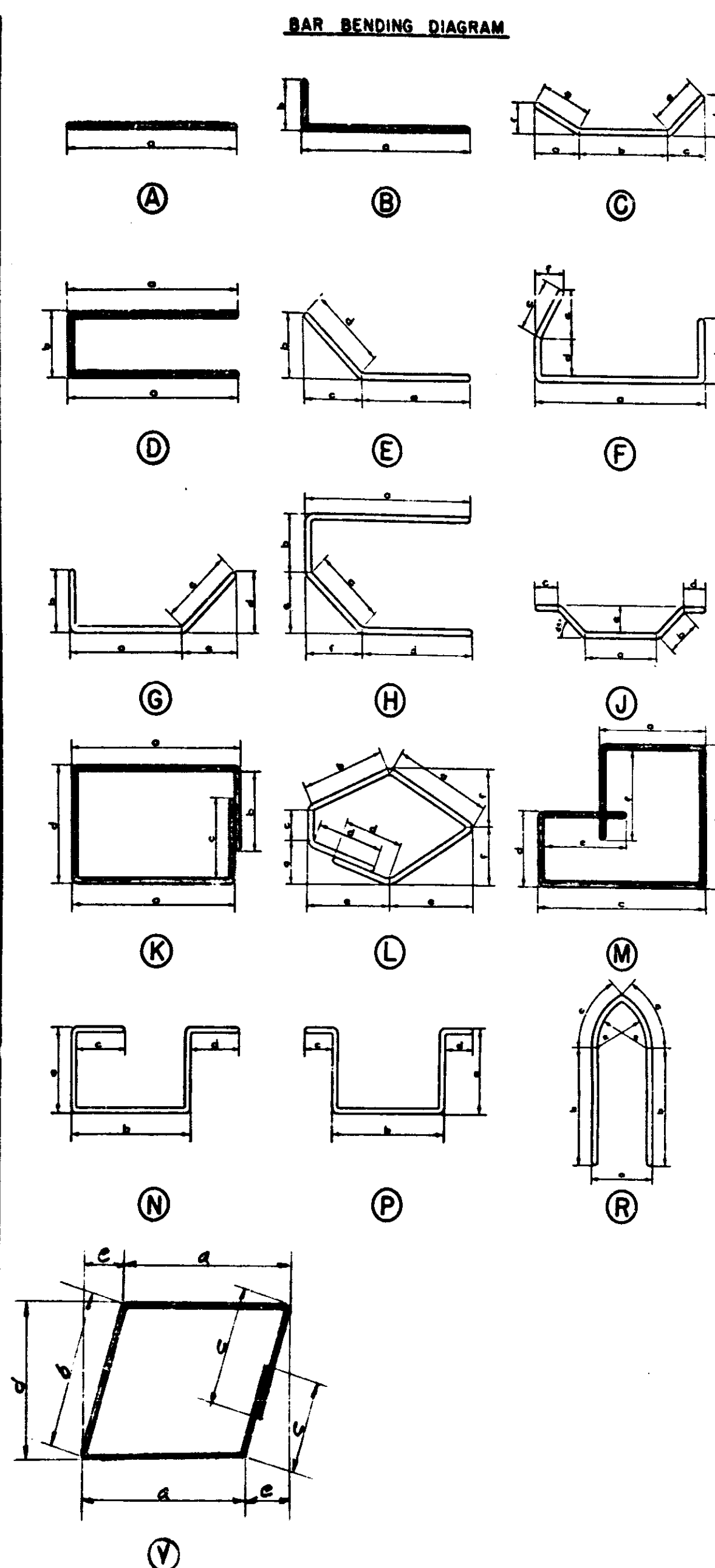
BI OF 16-5-6

SD4 of 16093 RN

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A1	4'-3"							6	4'-3"	90	574
A2	7'-0"							6	7'-0"	90	946
A3	34'-0"							6	34'-0"	20	1021
A4	33'-0"							6	33'-0"	20	991
A5	8'-3"							6	8'-3"	180	2230
A6	34'-0"							4	34'-0"	20	454
A7	33'-0"							4	33'-0"	20	441
A8	5'-3"							4	5'-3"	4	14
A9	11'-6"							4	11'-6"	8	61
A10	7'-0"							4	7'-0"	8	48
A11	5'-6"							4	5'-6"	8	29
D1	2'-3 1/2"	1'-0"						4	5'-6"	12	44
D2	3'-9 1/2"	1'-0"						4	8'-6"	12	68
D3	5'-6 1/2"	1'-0"						4	12'-0"	18	144
TOTAL STEEL IN ABUTMENTS 7085											

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A51	40'-0"							7	40'-0"	16	1308
A52	40'-0"							7	40'-0"	16	2176
A53	8'-6"							6	8'-6"	74	945
A54	8'-6"							6	8'-6"	58	740
A55	14'-3"							7	14'-3"	38	2356
A56	33'-6"							6	33'-6"	4	201
A57	33'-6"							8	33'-6"	12	1078
A58	28'-0"							10	28'-0"	12	1846
A59	9'-6"							6	9'-6"	16	228
A60	5'-0"							7	5'-0"	48	916
B51	14'-3"	6'-0"						9	25'-3"	12	1030
K51	2'-0"	1'-6"	1'-6"	2'-0"				4	8'-9"	16	94
K52	1'-6"	1'-2"	1'-2"	1'-6"				4	6'-9"	16	72
K53	2'-6"	1'-5"	1'-5"	2'-0"				4	9'-9"	32	208
K54	2'-6"	1'-5"	1'-5"	2'-0"				4	9'-9"	52	339
V51	1'-8 1/2"	1'-8 1/2"	1'-3 1/4"	1'-7 1/4"	5 1/2"			4	7'-6"	32	160
TOTAL STEEL IN PIERS 13192											

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A101	24'-9"							4	24'-9"	819	15538
A102	36'-0"							4	36'-0"	20	481
A103	1'-9"							4	1'-9"	12	14
A104	5'-0"							4	5'-0"	12	24
A105	2'-3"							5	2'-3"	24	56
A106	3'-9"							5	3'-9"	24	94
A107	5'-3"							5	5'-3"	24	132
A108	6'-9"							5	6'-9"	24	169
A109	8'-3"							5	8'-3"	24	202
A110	9'-9"							5	9'-9"	24	244
A111	11'-3"							5	11'-3"	24	282
A112	12'-9"							5	12'-9"	24	319
A113	14'-3"							5	14'-3"	24	357
A114	15'-6"							5	15'-6"	24	388
A115	17'-3"							5	17'-3"	24	432
A116	18'-6"							5	18'-6"	24	463
A117	20'-0"							5	20'-0"	24	501
A118	21'-9"							5	21'-9"	24	545
A119	23'-0"							5	23'-0"	24	576
A120	24'-6"							5	24'-6"	24	613
A121	26'-0"							5	26'-0"	20	542
A122	27'-6"							5	27'-6"	24	688
A123	29'-0"							5	29'-0"	24	726
A124	30'-0"							5	30'-0"	618	19337
A125	36'-3"							5	36'-3"	10	605
B101	5'-0 1/2"	9"						4	5'-9"	300	753
D101	6 1/2"	1'-6"						4	2'-6"	600	1002
K101	3'-2"	11 1/2"	11	1'-3 1/2"				4	6'-3"	8	33
M101	2'-2"	1'-3 1/2"	3'-2"	10"	1'-7"	1'-1"		4	10'-0"	40	267
TOTAL STEEL IN SUPERSTRUCTURE 43387											



Note:—
All right angle bends in
Reinforcing Steel to be made
about a pin of the minimum
diameter allowed by the Standard
Specifications.

Grand Total Steel Reinforcement 63,644 #

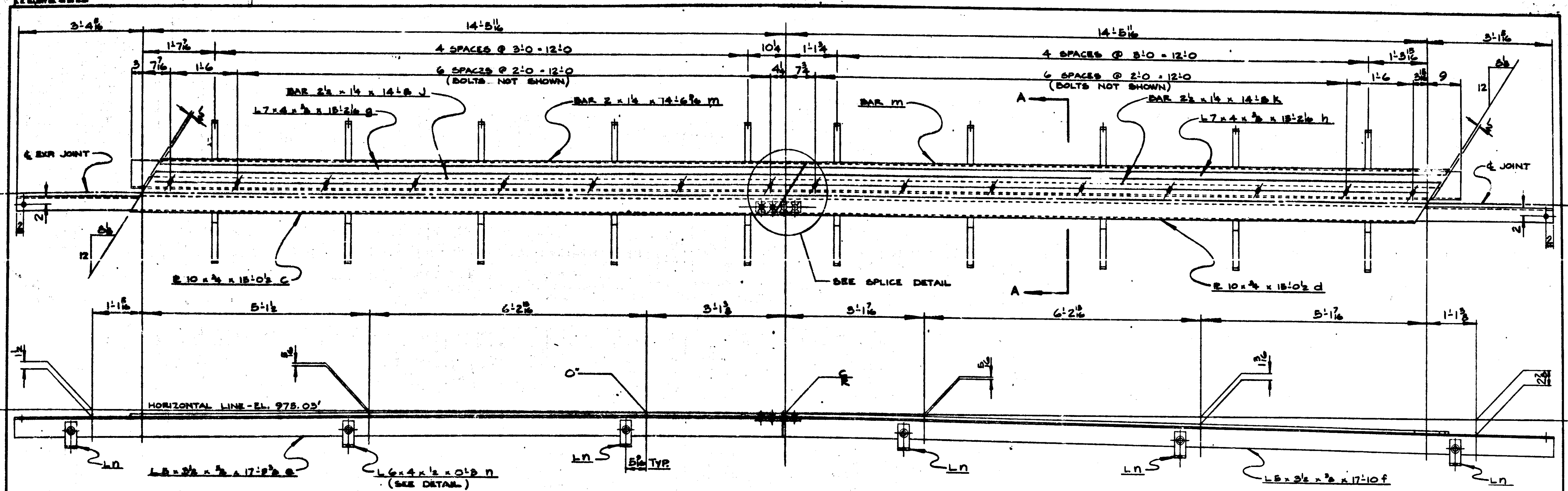
MICHIGAN STATE HIGHWAY DEPARTMENT

STEEL REINFORCEMENT DETAILS

NO.	REVISIONS	DATE	BY
	DESCRIPTION		

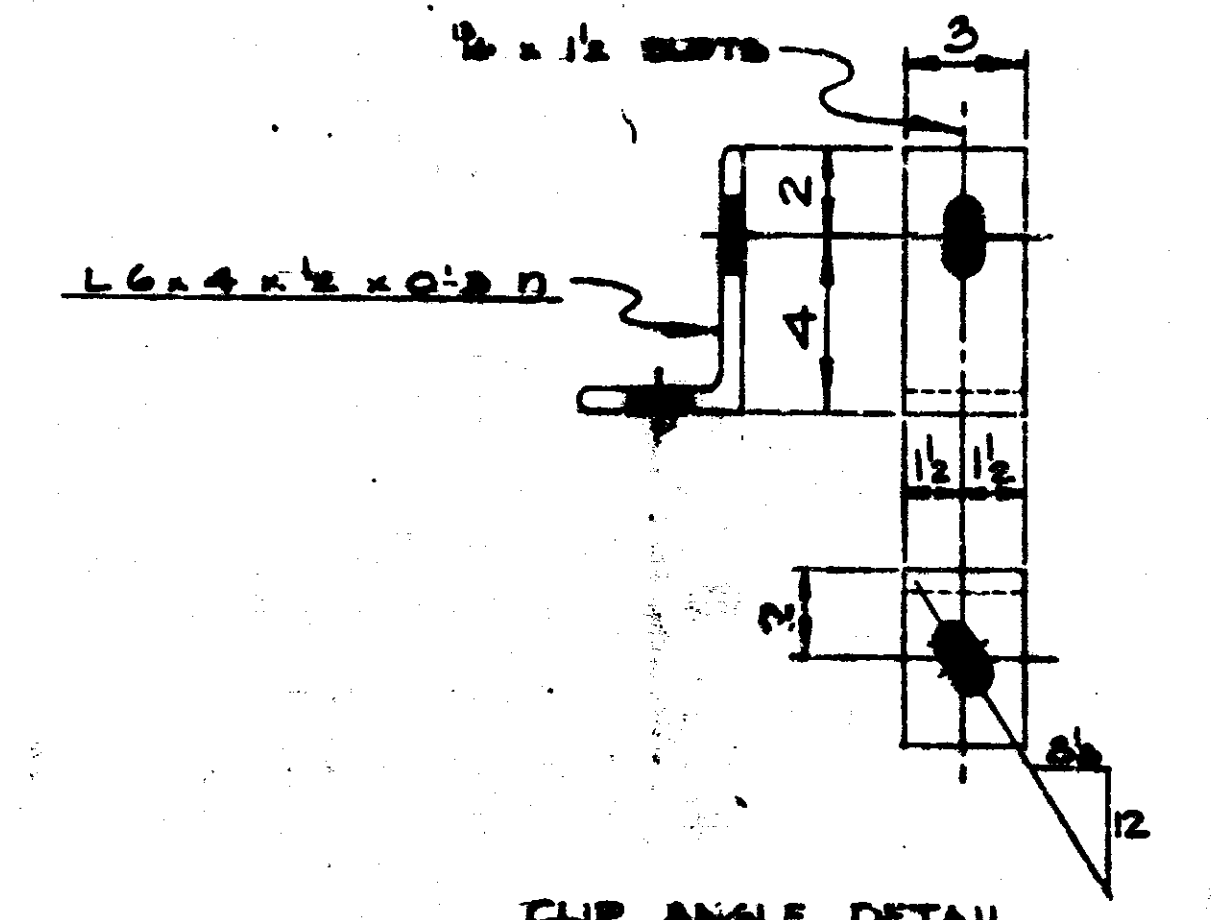
DESIGNED BY	PROPOSED 11-18-66
DRAWN BY	R.O.W. 11-17-66
CHECKED BY	F.O.C. 11-18-66
DATE	11-18-66
BY	11-18-66

Bl of 16-3-6



ONE EXPANSION DAM REQ'D AS SHOWN - MK. 3ED1

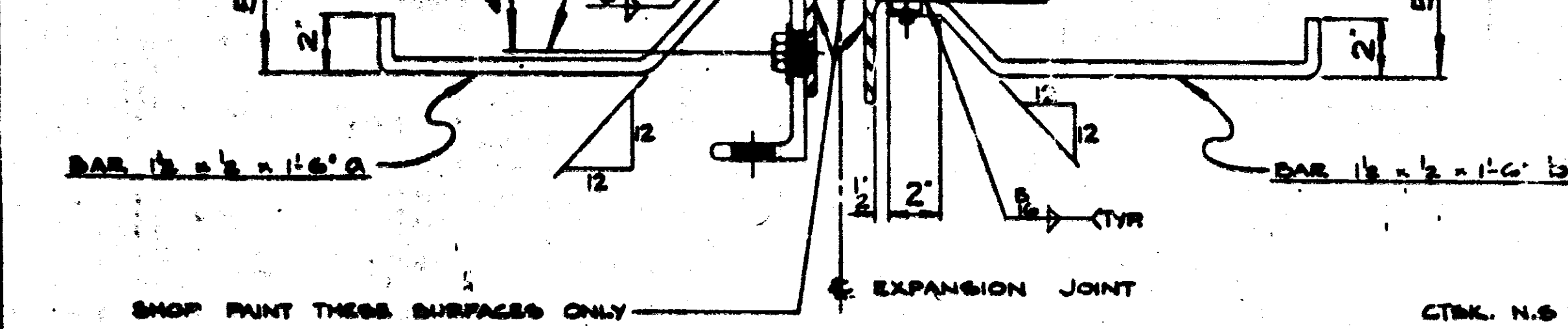
ONE EXPANSION DAM REQ'D AS SHOWN - MK. 3ED2



CLIP ANGLE DETAIL

APPLY A 1/2" COAT OF BITUMINOUS MASTIC TO THIS SURFACE IN SHOP BEFORE ASSEMBLY.

DRILL & TAP 5/8" L FOR 3/4" x 3/4" HEX HD. CAP SCREW & FLAT WASHER.

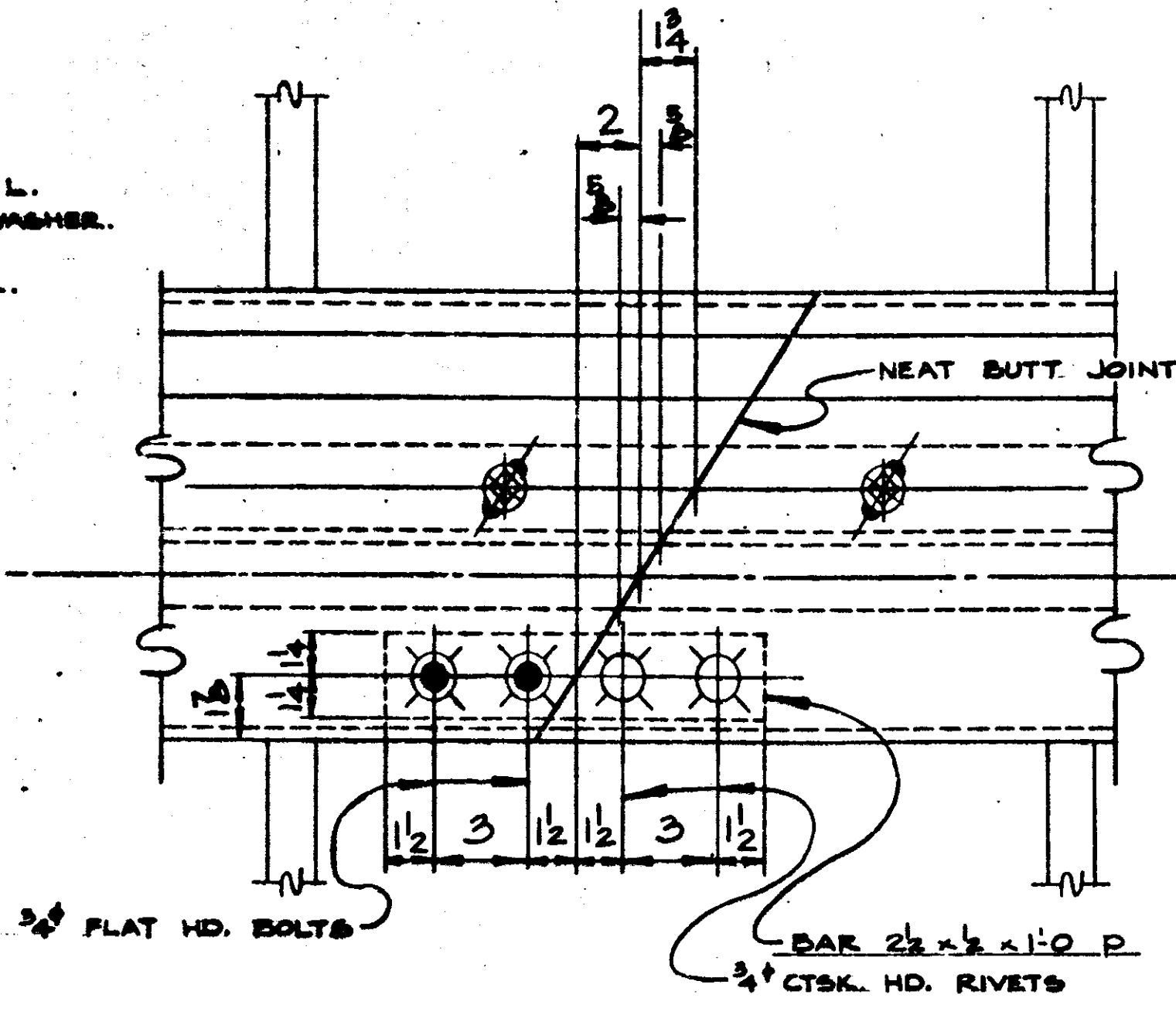


SHOP PAINT THESE SURFACES ONLY

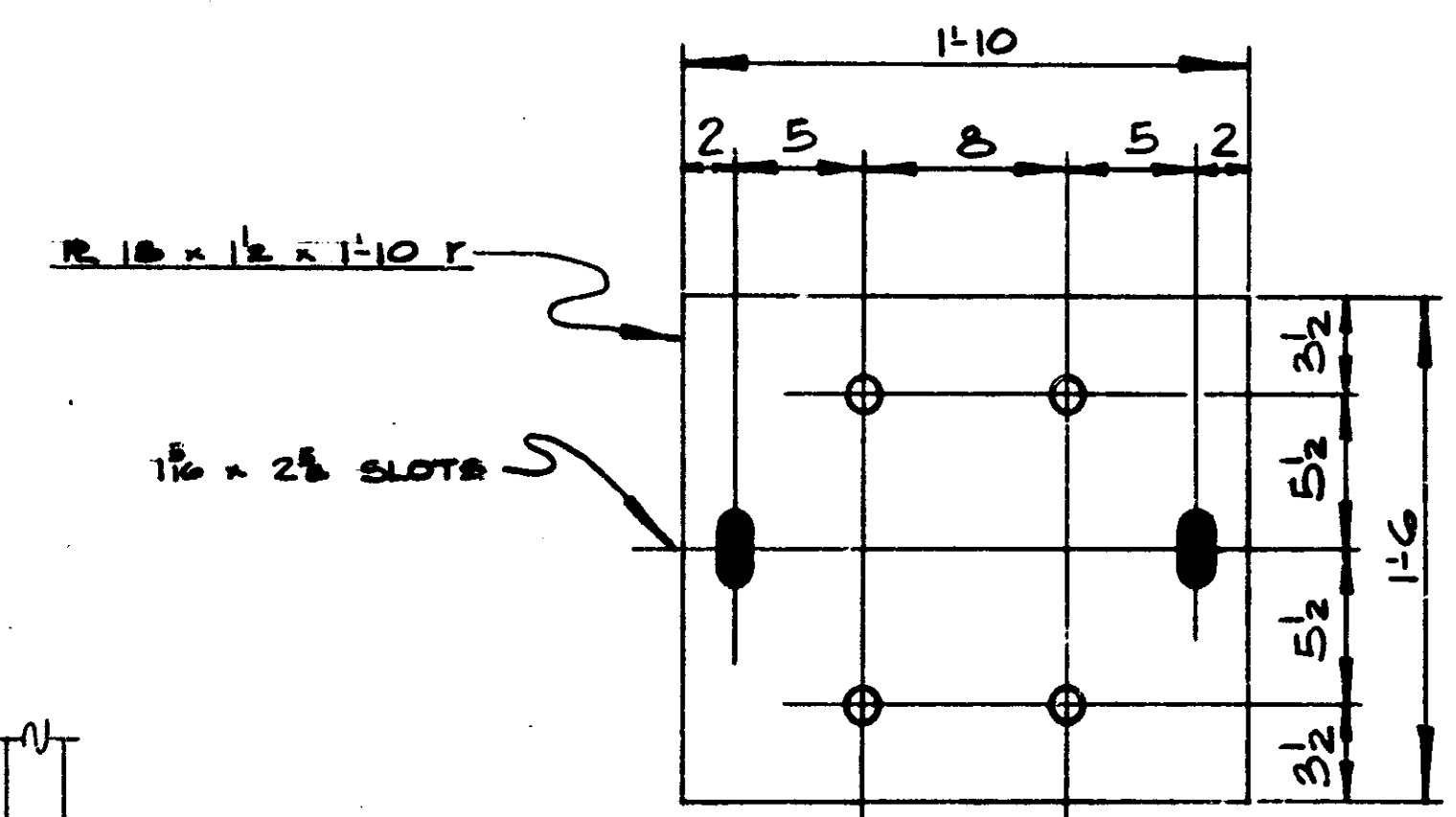
SECTION A-A

3/4" x 1/2" SLOTS IN 1/2" R. 3/4" HOLES IN 2 1/2" x 1 1/4" BAR & 7 x 4 L. 5/8" x 3" SQ. HD. SQ. NUT M. BOLT & FL. WASHER. TACK WELD NUT TO 7 x 4 L. GREASE BOLTS FOR EASY REMOVAL.

CTSK. N.B. FOR 3/4" FLAT HD. BOLTS



SPLICE DETAIL



SEE PINTLE DETAIL, SHEET #4

SHEET LEAD 18 x 1/2 x 1'-10 6-

6 MASONRY PLATES REQ'D - MK. 3MP3

REVISION			
NO.	DESCRIPTION	DATE	BY

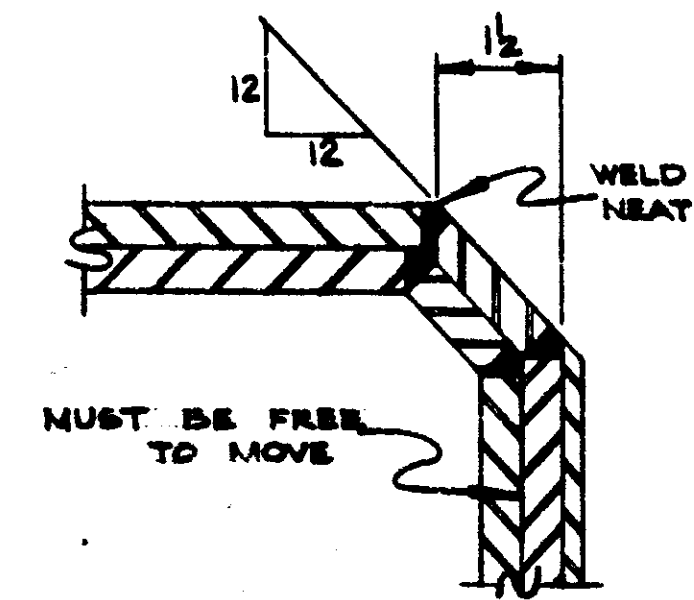
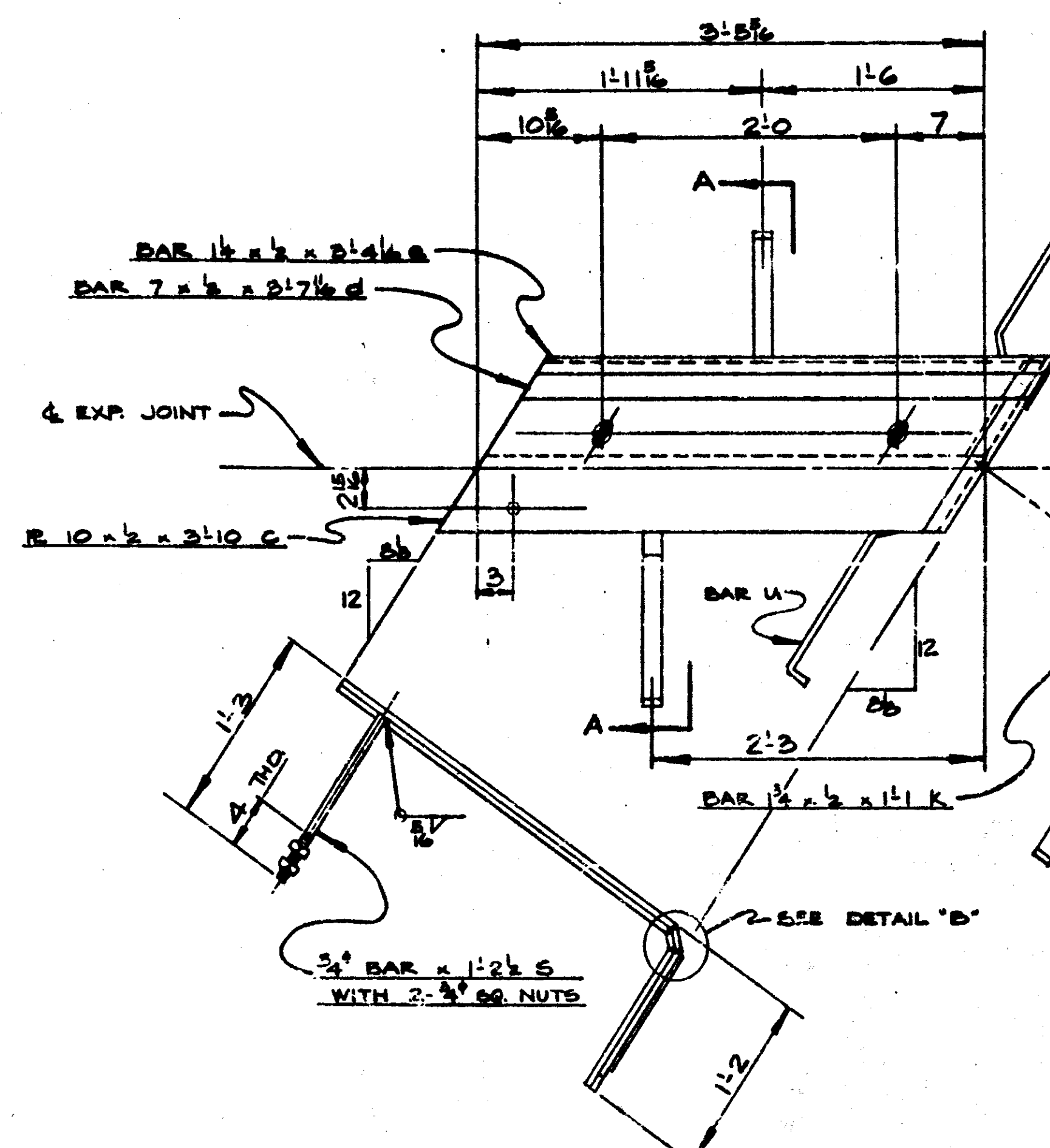
F. YEAGER
BRIDGE & CULVERT COMPANY
 1701 KEARNEY ST. - PORT HURON, MICH.

BRIDGE B1 OF 16-5-6, C1
 176 (US27 RELOC.) N.E. CROSSING RONDO
 ROAD, 3.6 MILES N.E. OF WOLVERINE,
 CHEBOYGAN COUNTY.

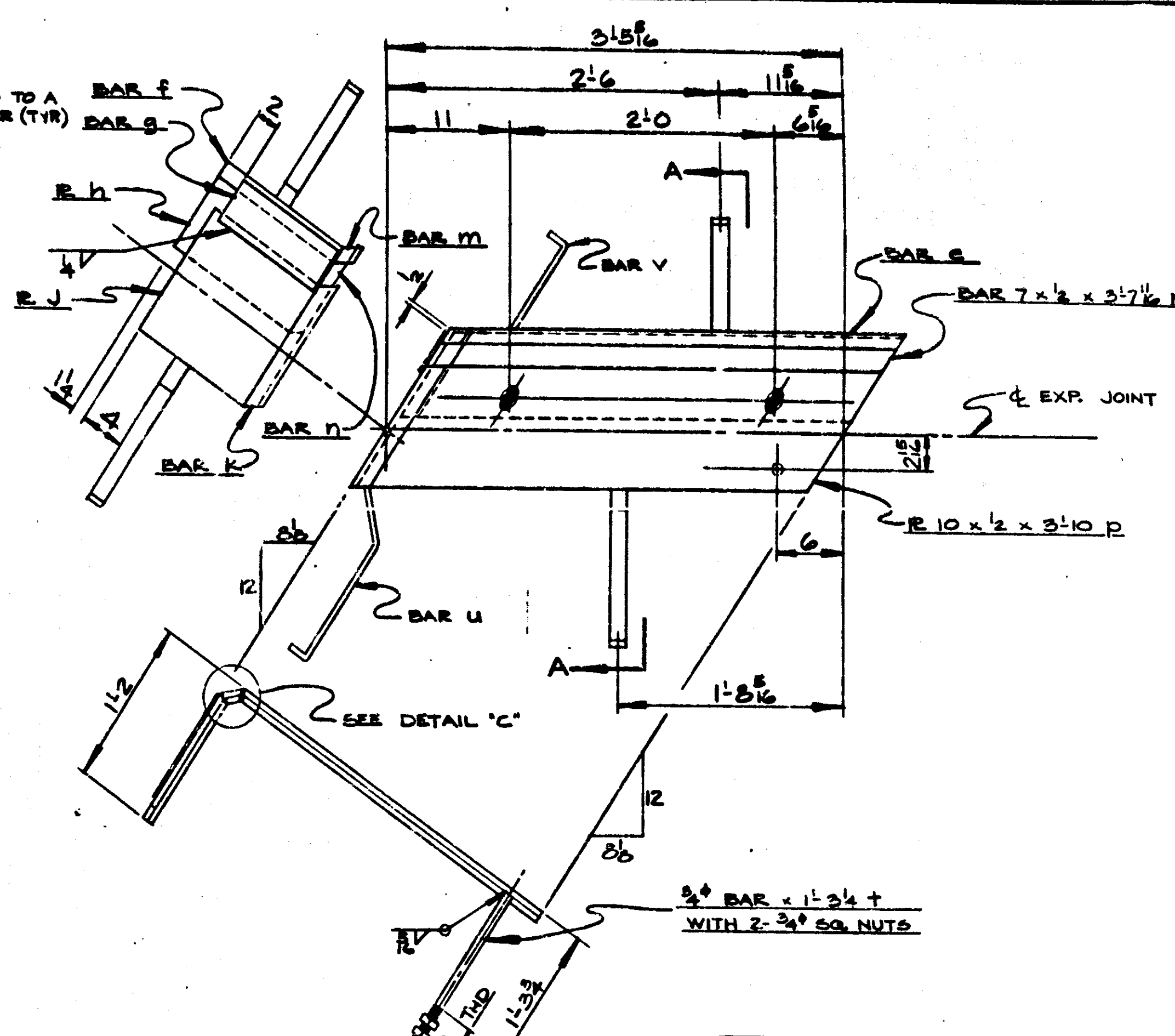
MICH. BRIDGE CONSTRUCTORS, CONT'R.

DATE 5-23-61 JOB NO. R 21210 SHEET 3 OF 4
 BY JAM

504 of 16092 RB



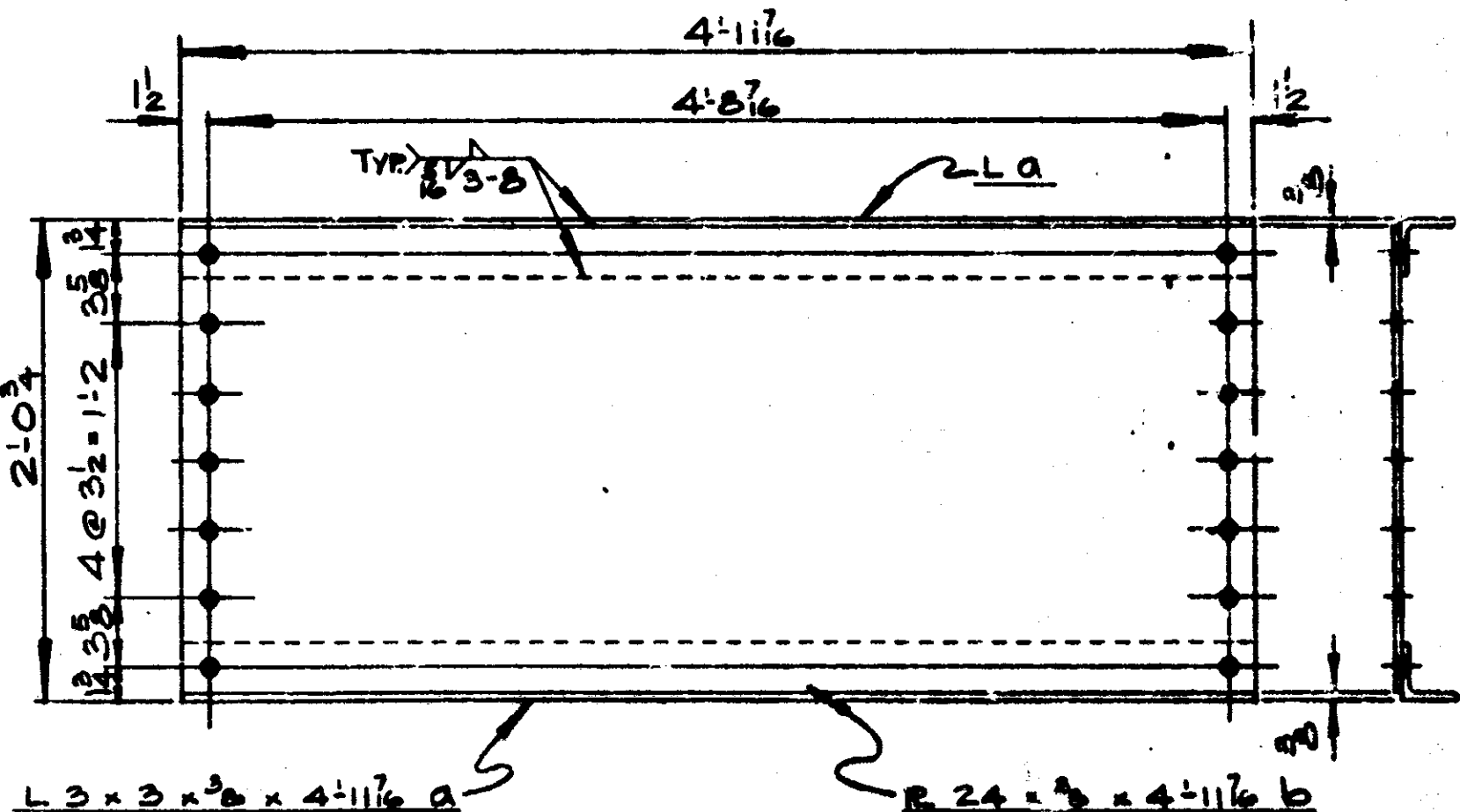
DETAIL 'B' - AS SHOWN
DETAIL 'C' - OPP. HAND



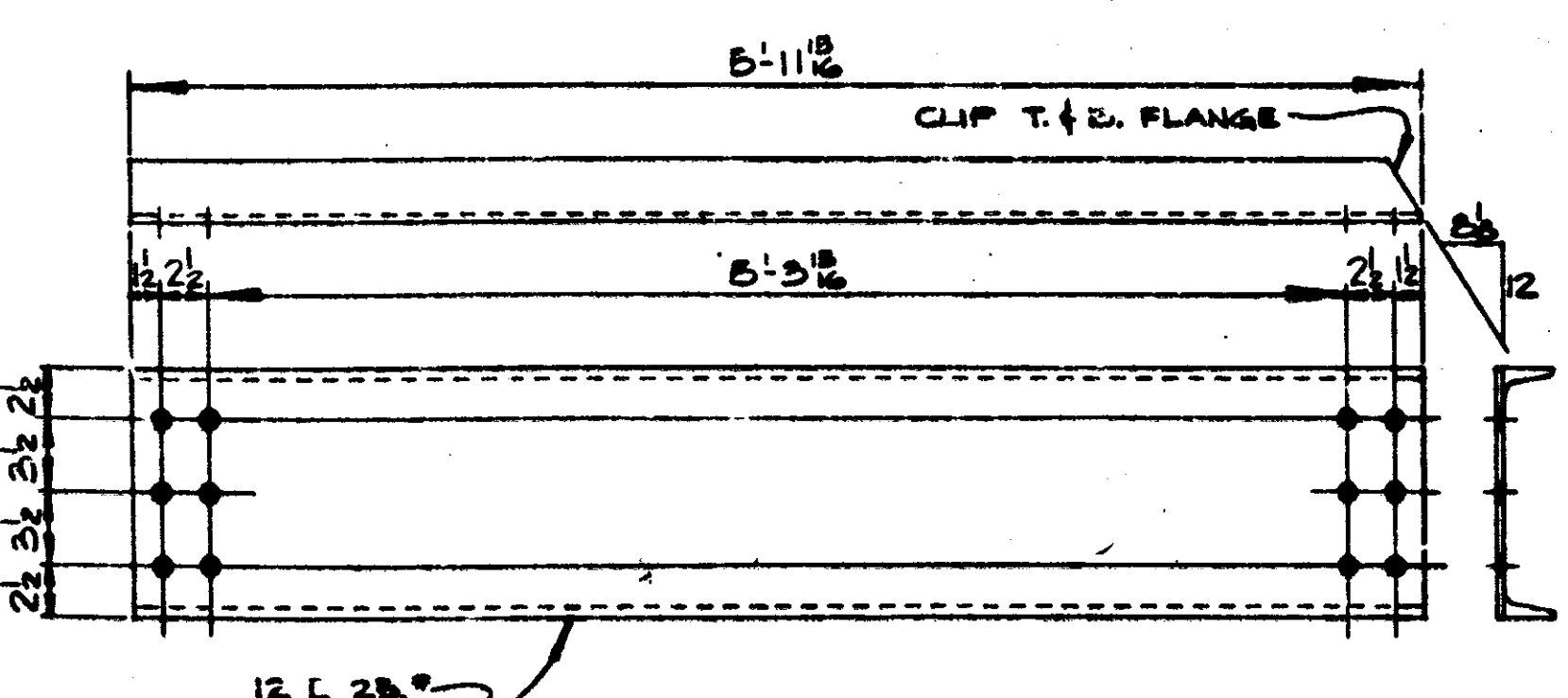
ONE EXPANSION DAM REQ'D. AS SHOWN - MK. 4ED1

ONE EXPANSION DAM REQ'D. AS SHOWN - MK. 4ED2

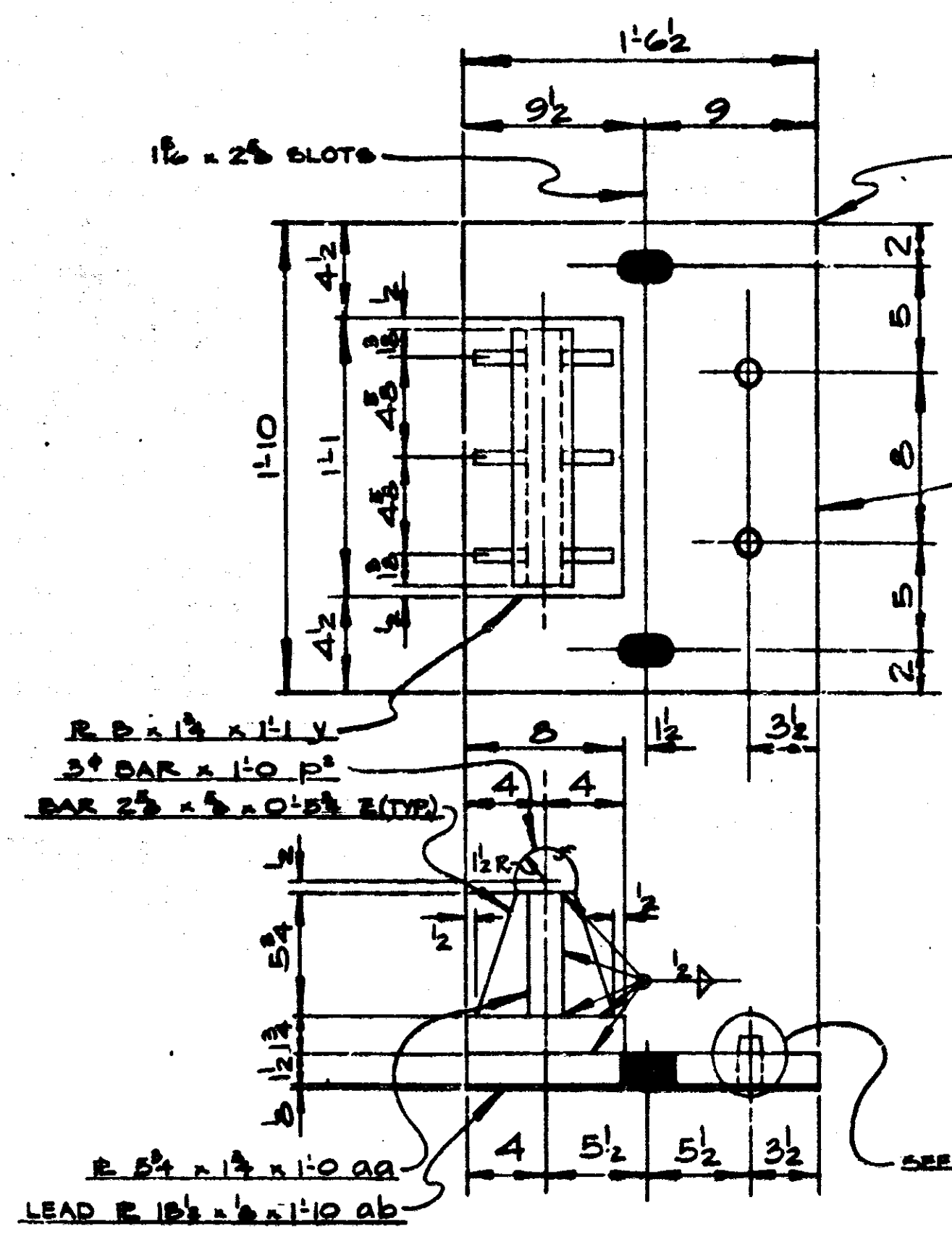
2" x 1/2" SLOTS IN 10 x 1/2 R.
3/16" HOLES IN 7 x 1/2 BAR.
1/2" x 1 1/4" SH. SN. M. BOLT WITH FL. WASHER.
TACK WELD NUT TO 7 x 1/2 BAR.
GREASE BOLTS FOR EASY REMOVAL.



30 DIAPHRAGMS REQ'D. AS SHOWN - MK. 4D1



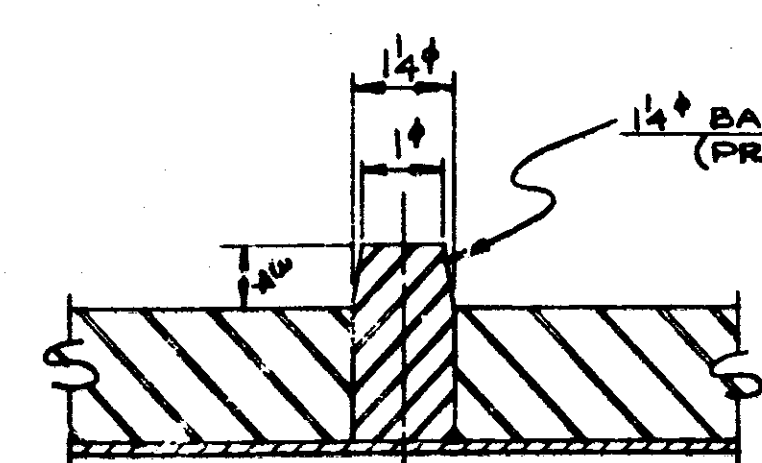
20 DIAPHRAGMS REQ'D. AS SHOWN - MK. 4D2



6 MASONRY PLATES REQ'D. AS SHOWN - MK. 4MP2

APPLY A 1/2" COAT OF BITUMINOUS MASTIC TO THIS SURFACE IN SHOP BEFORE ASSEMBLY.

MARK THIS EDGE "EAST"



PINTLE DETAIL

SHOP PAINT THIS STRIP ONLY

SECTION A-A

REVISION			
NO.	DESCRIPTION	DATE	BY

F. YEAGER BRIDGE & CULVERT COMPANY 1701 KEARNEY ST. - PORT HURON, MICH.	
BRIDGE B1 OF 16-B-6, C1 I75 (US27 RELOC.) N.B. CROSSING RONDO ROAD, 3.6 MILES N.E. OF WOLVERINE, CHEBOYGAN COUNTY.	
MICH. BRIDGE CONSTRUCTORS, CONT'R.	
DATE 3-24-61	JOB NO. R21210
BY JAM	SHEET 4 OF 4